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Wage assimilation: migrants versus natives and foreign
migrants versus internal migrants

Steinar Strøm, Alessandra Venturini and Claudia Villosio

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Abstract

The paper wants to understand the assimilation pattern of foreign migrants in Italy. Three novelties characterize this study. First, the research compares the wage assimilation of international migrants with both internal migrants and local natives in Italy, a country with substantial internal and international migration. This comparison, never exploited before, provides indirect evidence for the role played by language and knowledge of social capital in the assimilation of foreign migrants relative to both natives and internal migrants. Second, we inquired into the possible causes of under-assimilation by controlling for the date of entry and migrant sector concentration. Third, we model new corrections of the selection bias due to return migration. The correction for the selection bias is introduced in the wage equation through a duration extension of the traditional Heckman correction term and alternatively through a hazard rate correction. The empirical test uses the Italian administrative dataset on dependent employment (WHIP), to estimate a fixed effect model for the weekly wages of males aged 18-45 with controls for selection in return migration and unobserved heterogeneity. The three groups of workers start their careers at the same wage level. But, as experience increases, the wage profiles of foreign nationals and natives, both internal migrants and locals, diverges which seems to hint at the importance of language and social capital. However, sector-by-sector analysis shows that in “migrant intense sectors” internal migrants and locals have the same wage profile as foreign workers. Positive selection in returns reinforces the view that the best leave because they have few career options. Thus under assimilation is caused more by community and job segregation than by a lack of language and social capital: alternatively it is the result of their interrelations.

Keywords

Migration, Assimilation, Wage differential, Return Migration

JEL code: J31, J61, C23

Introduction*

The migration debate is intertwined with the debate on an aging European society, something which is particularly dramatic in Italy. This is a reminder of the importance of permanent migration flows and of their integration in host countries. Social cohesion¹ is the challenge that societies like Italy face and economic integration is one of the pillars on which integration is based.

The policy debate takes two different turns: on the one hand, improving the chances of social and economic integration at the migration policy level by selecting only those foreign nationals who have a high chance of integration, namely the highly skilled or migrants from communities with a better rate of socio-economic integration; and, on the other hand, putting in place an effective set of integration policies which can be implemented after arrival and which favour language and cultural knowledge and, therefore, assimilation.

In this paper we contribute to this debate by analysing the economic integration of foreign migrants in Italy. Italy is, of course, a country of recent immigration, but a country which also has a long experience of international and internal mobility².

Foreign migrants started to choose Italy as a destination country at the end of the 1970s, when, after the first oil shock, Northern European countries adopted restrictive immigration policies and it became increasingly difficult to enter their labour markets. The inflows to Italy, and, in general, to Southern European countries, thereafter, became increasingly important for migrants. Indeed, in 2010 migrants went to make up 8% of the population in Italy, 7.4% in Greece, 6.3% in Portugal and 14.5% in Spain (OECD, 2012). The political debate in Italy initially focused on the entrance of foreign nationals.³ But the rapid aging of Italian society (31% of the total population is more than 65 years old, one of the highest shares in Europe) and its need for a permanent population to offset shrinkage has moved the debate on. Talk is now of economic and social integration and the most appropriate policies to favour these kinds of integration.

This study compares foreign migrants not only with native local workers (who work in their birth area), but also with native migrants (who are born in a different region). In so doing it provides new insights into foreign assimilation. The comparison, not yet exploited in Italy or, indeed, in any other country known to us, makes for interesting reading. After all, native immigrants, unlike foreign immigrants, are supposed to know the language of the destination country: the empirical literature has shown language to be crucial in assimilation⁴. Moreover, native immigrants should also share some of the social rules that apply in the destination countries, so that they should not be disadvantaged relative to national local workers: at the very least, they should be less disadvantaged than foreign migrants⁵.

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¹ See Ruedin and D'Amato 2012.

² For a survey see Del Boca and Venturini 2005.

³ The available empirical research shows that in general foreign nationals do not compete with natives in the Italian labour market (Gavosto *et al.* 1999, Venturini and Villosio 2006). If there is competition it is between Southern internal migrants and foreign migrants (Brucker, Fachin, Venturini, 2010).

⁴ For instance, Dustmann and Van Soest, 2002, Chiswick and Miller, 2012

⁵ An important role is sometimes played by the community already residing in the destination country transferring knowledge and helping migrants both native and foreign to find a better job. We also wonder if the network of native immigrants is more efficient than their foreign equivalents. The literature on the role of networks in favoring the job match of workers is very large, see for instance Simon and Warner 1992, 10(3), Granovetter 1974 and the literature on the role of the network in determining the migration and the assimilation of migrants is even larger. In the empirical

However, anecdotal evidence on Italian native migrants, as found in novels, newspaper articles, films and sociological research (for instance Fofi 1975 and Ascolani *et al.* 1974), presents a very different scenario. In the 1960s and the 1970s southern native migrants in North Italy especially had great difficulties in being understood because they spoke dialects that were significantly different from Italian. The newspapers spoke of an invasion from the “South” and the word *meridionale* (“southerner”) essentially came to mean “immigrant”: the women were even called *mussulmane* (Muslims) because of their different behaviour. Moreover, they came from rural backgrounds and yet they found themselves in urban settings⁶. As a result they were discriminated against in their everyday lives, especially when renting accommodation. In a very real sense they were foreigners: certainly they were perceived as such. Resentment against internal mobility led to a local party (MAP Movement for the regional autonomy of Piedmont) which asked for a limitation on internal migration: there was concern about competition in the labour market, and regional type of preferences similar to the EU preferences close, and a limitation on welfare access. The electorate complained about taxes paid to the welfare state used by migrants who tended to have many children and who were poorer than the local population: many voted for MAP (Capussotti 2012). The MAP program sounds very similar to the current program of Lega Nord which has similar objectives in its electorate program. In addition Southern migrants felt “abroad” in the North including their encounters with the kind of bureaucratic tangles often experienced by migrants. For example, they were asked to get a residence permit before searching for a job. but they could only get a residency permit if they had a job. As Pugliese (2010) stresses they never properly integrated and they almost always had wages and positions below their ability⁷.

Employers when hiring do not know a worker’s individual productivity. However, there can be no question that they have greater difficulties evaluating immigrants, both native and foreign. The result is that native immigrants and foreign nationals may have similar initial wage profiles.

Our aim is, therefore, to test whether **foreign migrants** (born abroad and working in the region) perform differently from **local workers** (born and working in the same area), and **native migrants** (born in an area different from the working one). In looking into this problem we hope to give a better understanding of the role of language and social norms in economic assimilation.

Assimilation also depends on the characteristics of those foreign immigrants who remain in the destination country. The decision to return home is a function of the duration of stay in the destination country. Thus, in order to model the selection of foreign immigrants that leave the destination country, we have first extended the well-known static Heckman approach to deal with the combination of selection and duration. We have also used the proportional Hazard rate function,⁸ which is an alternative specification of a selection term which also accounts for duration effects.

In addition, we tried to get to the bottom of the reason for under-assimilation by taking into account: the community effect which might constrain assimilation; labour market trends at the time of arrival, which might affect the possibility of finding more promising jobs; and, finally, the employment sector which might lead to segmentation.

The Italian administrative dataset uses empirical tests on dependent employment (WHIP). It estimates a fixed effect model for the log weekly wage of males aged 18-45 with controls for selection in return migration and unobserved heterogeneity from 1985 to 2003.

(Contd.) _____

version we will employ a variable on the dimension of the community, but we cannot control for the tenure of members, nor for any active role played. It is thus more similar to a congestion variable than to a network one.

⁶ They allegedly grew tomatoes, basil and parsley in their bath tubs.

⁷ Pugliese p.56.

⁸ Similarly Kirdar (2008) adopts a hazard rate function to inquire into the effect of saving in the decision of return.

The three groups of workers start their careers at a similar wage level. However, as experience increases, the wage profiles of foreign nationals and natives, both immigrants and locals, diverge. This result is also driven by positive selection in the returns. Put in other terms foreign workers with lower wages are the most likely to stay in Italy.

Analysis by similar time of entrance provides analogous results with a strong under-assimilation of migrants which does not depend on the jobs available in the labour market at the time of entrance. Instead, analysis by Migrant Intense Sectors shows a similar pattern for the three groups, providing evidence in favour of a structural interpretation of the results. Foreign migrants do not assimilate because they are employed in sectors which do not provide career options. We argue that there is segmentation of the labour market: 73% of foreign nationals are employed in 47 out of 168 total sectors, while only 40% of natives are to be found in these sectors. In these sectors the average foreign share is 22.5% – with a very large dispersion, some sectors having a foreign share of over 50% – while the foreign share in the remaining sectors is a paltry 5.4%.

The present paper is divided into 6 sections: (i) a brief history of migration to Italy; (ii) a brief review of the assimilation literature; (iii) return migration in the assimilation model; (iv) a description of the dataset and of the variables used; and (v) a section of results with a part regarding return migration, one concerning aggregate assimilation and one on controls for the time of entrance and for the sector of entrance. A concluding section (vi) closes the paper.

1. Brief historical summary

During the 1980s Italy was first exposed to immigration from neighbouring areas (North Africa) and from Asia (mainly Filipinos) and Latin America. With the fall of the Berlin Wall, inflows also began from Eastern Europe. Initially, migrants came from nearby Albania. But they later arrived from further away, from Romania and Moldova, attracted by the similarity of Italian to their native languages. They came too from as far away as Ukraine (See Figure 1). In many cases, they entered the country illegally and their regular position is the result of the many amnesties granted by the Italian government. To become legal, migrants need a regular job offer, and to obtain one, they usually have to work illegally for at least a couple of years. The number of regular permits decided each year by the government has always been insufficient in satisfying the number of immigrants who come to Italy. It has also been insufficient in satisfying the national demand for them. Illegal entry was used as a first step towards legalization in the destination country. The repetition of amnesties – a policy shared with the other Southern European countries – has created the expectation of further sanatoria. It has also made it more difficult to control migration (on this see Venturini 2004: ch.5). The strong reaction of the native population against larger legal inflows has led to the belief that it is impossible to control the country's borders. The information set out in Figure 1 is derived from residence permits, which only cover legal foreign nationals. Estimates on illegal ones⁹ stood at about half a million undocumented immigrants in 2010, equal to 12% of the resident foreign population. This share has changed a great deal over time (from 10 to 40% of the legal total). This variation depends, to a very great extent, on whether the estimate is taken after or before an amnesty¹⁰.

According to the most recent data on foreign residents (2012, ISTAT) 61.6% of foreign residents were located in the North while only 25% in the Centre and only 13% in the South and the Islands. In general they had unskilled jobs, though in a few cases they had higher qualifications. Men usually worked in construction, in agriculture and in manufacturing, while women worked in family services and services in general. A few women also worked in industry (2011, ISTAT).

⁹ Produced by ISMU with the "Centre Sampling Technique" (Baio, Blangiardo et al. 2011 See www.ismu.org).

¹⁰ ISMU Report 2012

While foreign migration is a relatively recent phenomenon, Italy has a long tradition of international emigration: first overseas to the Americas, then to Northern Europe. There has also been, however, extensive internal migration from the less developed areas of the South, but also of the North East, to the richer areas of the North West. Emigration from the South to the Northern regions once represented 33% of Southern employment. With the Second World War, international emigration ceased, and it continued after the War in Europe and in Italy, but at a slower pace than before the war. Indeed, migration between Northern and Southern Italy was very important for its dimension and duration and declined steadily only from the 1970s onwards despite a substantial increase in the unemployment differential.

Drawing on social security data, Figure 2 presents the last thirty years of internal migration by natives¹¹: the North West is by far the main destination area. Most emigration is from the Southern regions to all possible destinations, but most notably to the North West and Centre. A negligible amount of people moved from the North West to the South. Finally, flows from the Centre have been insignificant throughout the period. After a period of decline, in the second half of the 1990s inflows acquired new strength, especially to the North East.

Faini *et al.* (1997), using a special edition of the quarterly Labour Force Survey, show that the fall in mobility levels in Southern Italy may have been driven by a combination of several factors: demographics; high mobility costs; and inefficiencies in the job matching process sufficiently strong to offset the influence of rising unemployment differentials. Attanasio and Padoa Schioppa (1991) also point out the role of mismatches in the labour market. These mismatches may explain low mobility and high unemployment in the South. Cannari *et al.* (2000) show that the North-South housing price differential has become a notable factor in the falling off in geographical mobility. Since 1995, however, interregional mobility has increased again. Using information on change of residency reported at local registers, Piras (2005) shows that the propensity to emigrate increases with education level, and that there is evidence of a brain drain from the Italian South.¹²

Figure 2 shows a general increase in foreign immigration in all the destination areas. But there is also a decline in migration from the South, with the exception of the North East. Even there, however, there are more foreign than internal migrants, suggesting competition between the two groups of workers (Brücker *et al.* 2009).

2. Assimilation literature: some recalls

The economic literature on the assimilation of immigrants began with the pioneering work of Chiswick (1978) and the seminal contributions by Borjas (1985) and La Londe and Topel (1992): all these were based on the US Census. The over-assimilation initially found (Chiswick 1978, using a single census) was attributed to positive self-selection by migrant workers: that is, they were more entrepreneurial, more talented and less risk averse. The under-assimilation of immigrants found by Borjas (1985) in the US was attributed to the lower quality of the most recent cohorts.

The differing quality of cohorts at the time of immigration is due to various factors: changes in immigration policy, so that individuals with different characteristics are selected; different economic conditions in the destination country which alter the nationality mix of immigrants and thus gives rise to changes in their productivity; and changes in the composition of the cohorts due to non-casual repatriation. The same result of under-assimilation was reported by La Londe and Topel (1992), but it

¹¹ Information on internal migration can also be derived from the ISTAT Local registers which report the change of residency. However, these are only flow data.

¹² This last source reports the number of both workers and family members who change their residency, but it has no labour information. Hence it is not suited for any assimilation study. We overcome this problem by using the WHIP – Work Histories Italian Panel – which enables us to discriminate between workers on the basis of their place of birth.

was attributed to less attractive economic conditions in the destination country at the time of arrival, which offered few career prospects to migrants. This debate is conditioned by the rich set of information available from the US Census, which, however, raises a series of methodological problems more easily solved by longitudinal data. The study on true longitudinal data conducted by Lubotsky (2007), however, offers a similar conclusion: immigrant wages increase by about 10-15% in the first 20 years in the US, but not enough to offset the 35-40% immigrant/native wage differential. Assimilation is a function of immigrants' human capital: while college degree immigrants earn 30% more than average natives, immigrants who arrive with low schooling levels never attain the average native earning levels (Card 2005).¹³

Economic assimilation research in Europe started a little later and has been mainly based on national panel data. The core of empirical models has been: the immigrant's *education* before arrival, and after arrival; his/her *acquisition of human capital on the job* before and after immigration; and his/her *proficiency* in the language of the destination country, which also favors integration in the second generation. Chiswick (1991) found that knowledge of the native language was crucial for assimilation into the British labour market, a result confirmed by Shields and Wheatley Price (2002), and also by a more recent study by Dustmann and Van Soest (2002), Dustmann and Fabbri (2003) and Chiswick and Miller (2012).

In Denmark¹⁴ Neilson *et al.* (2000) found that job assimilation increases for foreign nationals, not with the number of years that s/he has been in the country, but with the number of years that s/he has worked in the country. These authors thus emphasize that workers increase their human capital only when they are working, not just during their presence in the destination country. Kee (1994), for the Netherlands, concludes that one of the causes of the lack of assimilation of foreign workers is that only few immigrants continue their studies in the receiving country. Also Grainer and Marciano (1975) basing their studies on France and using data from the 1968 census in a descriptive way, reach the same conclusions. They suggest that the lower average wages for foreign nationals with a nuclear family is mainly due to lower investment in human capital, and this varies substantially across ethnic groups.

The process of assimilation, however, also depends on the characteristics of immigrants who remain in the destination country. As Borjas (1985), Borjas and Bratsberg (1996) and Dustmann (2003 and 2007) stress in their articles on the return decisions of migrants, foreign nationals who remain are typically the best or the worst of the group.¹⁵ The migrant decides to return if the migration project fails or, in the opposite case, if the migration project is very successful and allows the migrant to return home and start a business there. If those who remain are the best, the empirical estimates of assimilation will be biased upwards (over-assimilation). Alternatively, if those who remain are the worst, the estimates will be biased downwards (under-assimilation). In both cases they are inconsistent. The modeling of the re-migration decision – as Dustmann (1996, 2003) terms it – is used as a first step to control for the selectivity of assimilation. Dustmann (2003)¹⁶, Constant and Massey (2003) and Fertig and Schurer (2007) modeled the return decision as a migration decision function of

¹³ David Card (2005) stresses that it is probably more relevant and interesting to understand if the second generation of migrant is assimilating, and that it would be a more complete measure of the long run parental assimilation process. His results show that immigrants working in the US labour market earn today less than natives (but not a lot less), and that different education levels explain 10% of the gap.

¹⁴ They used administrative data and test a random effect model on foreign wages.

¹⁵ Since his 1985 article Borjas has stressed the selectivity of the migration decision as a function of the human capital return of migration. In his 1996 article with Bratsberg he also considers the selectivity of the return decision using a cross-sectional approach while always referring to a Roy return of human capital model.

¹⁶ Dustmann (2003) specifically inquires into the role played by changes in the income in the destination countries in determining the duration of staying.

the income differential and use family ties as instruments. The correction is introduced into the wage equation to analyze assimilation¹⁷.

Recent research on return migration and return migration policies focus more on the role played by economic prospects in the countries of origin in attracting migrants back home: e.g. Cassarino (2007) for the Maghreb areas; Mansoor and Quillin (2006) for many European and Central Asian countries; and Venturini and Villosio (2008) for migrants in Italy.

Other relevant variables are related to *labour market changes* which determine a worker's future prospect. Not only is the business cycle upon arrival crucial for an immigrant's assimilation. So too is the employment sector, which is affected in different ways by technological innovation. Rosholm *et al.* (2006) found that, between 1985 and 1995, both in Sweden and Denmark, job opportunities for male immigrants deteriorated. However, by using a panel of administrative data they showed that the migrant situation worsened independently from the different market trends in the two countries. This situation was due, instead, to structural changes in the markets, where the labor demand was for workers with high communication skills, consequently immigrants were at a disadvantage.

An additional factor in the assimilation process is imputed to migrant *networks* and *communities* (Borjas, 1992, 1995, Cutler and Glaeser, 1997). This has been reviewed by Hatton and Leigh (2007), who abandon the individual analysis of assimilation and shift to an analysis of assimilation for the community itself. The migrant's network can exert a positive effect by favouring the job search and job match. But it can also have a negative effect by reducing the social integration-interaction of immigrants: for example, knowledge of the host country's language (see e.g. Chiswick 1991, Dustmann and van Soest 2002, Dustmann and Fabbri 2003, Shields and Wheatley Price, 2002, Danzer and Yaman 2012), and in general of the informal life rules which prevail in the destination countries. Policies have been adopted to discourage the agglomeration of immigrants in particular areas, which has been considered a cause of low linguistic proficiency and which constitutes a disincentive to move in search of better job opportunities. In North European countries, however, the distribution of refugee immigrants around the country seems to be less efficient in integrating foreign nationals than the previous agglomeration model (Husted *et al.* 2001).

3. The assimilation model and return migration

The assimilation model used here is the traditional human capital model adopted by Chiswick, in 1978. We explicitly include measures of human capital acquired on the job and out of the job and control for selection in return migration.

The dependent variable is a measure of the individual **log** weekly wage [Y_{it}] which depends on individual fixed effects [α_i], individual time variant human capital variables [x_{it}] and a worker's job characteristics [z_{it}]. In addition we control for different **economic cycle** [m_{rst}] which affect both the region [r] and the sector [s] where the workers are employed and the size of the migrant's network [c] in the destination area [k_{crt}] which can favor or reduce the economic integration of migrants.

The process of assimilation, however, also depends on the characteristics of immigrants who remain in the destination country. If there is a systematic link between the decision to stay and labour market outcomes, a fixed effect estimate eliminates the bias. If it is not systematic, fixed effect estimates may give unreliable parameter estimates and we need to proceed in two stages.

In order to model the selection of immigrants that leave the destination country we follow two tracts.

¹⁷ To better explain what we are doing later on we name "static Heckman correction type" the correction which does not take into account the duration of stay as for instance in Fertig and Schurer (2007).

First we abandon the use of a “static” Heckman correction that implies that in each period the migrant decides whether to stay or to leave without memory of his previous experience¹⁸. We, instead, follow the approach of Dustmann (2003) in describing the return decision as a function of the year of arrival in the destination country and of Constant, Massey (2003) by explicitly modeling a version of Heckman correction to deal with the combination of selection and duration.

Assume that the log weekly wage equation has the following form

$$(1) \quad Y_{it} = f(x_{it}, z_{it}, \mathbf{m}_{rst}, \mathbf{k}_{crt}; \mathbf{a}_i) + \eta_{it}$$

where $f(\cdot)$ is a function of the variables and effects mentioned above. η_{it} is normally distributed with zero mean and is independent of the variables and effects inside f . Let T_{is} be the individual’s length of stay in the destination country, given that the individual arrived in year s . (To this end we suppress the subscript i which accounts for the fact that s varies across individuals i). We assume that $g(T_{is}) = q_{it}\gamma + \varepsilon_{it}$, where ε_{it} is normally distributed with zero mean and variance τ^2 , g is a suitable monotonic increasing transformation and $t+s$ is the year when the wage is observed. Note that ε_{it}/τ is normally distributed $(0,1)$. q_{it} are some observed variables that will be explained below. We assume that η_{it} and ε_{it} are normally **jointly** distributed. We assume that the time of arrival is uncorrelated with η_{it} . Let φ denote the p.d.f of the standard normal distribution and let Φ be the corresponding c.d.f. We only have wage observations for those who are still in the country in year $t+s$. We thus have a selection problem. As mentioned already we shall derive a duration version of Heckman’s procedure (Heckman, 1979) to control for possible selectivity bias.

To do so, note that due to the normality assumption we can write $\eta_{it} = \rho \varepsilon_{it} + v_{it}$,

where v_{it} is normally distributed and independent of ε_{it} , and where ρ is the correlation coefficient. Let $1\{\cdot\}$ denote the indicator function. We then get for any real number a that

$$(2) \quad E(\eta_{it} 1\{\varepsilon_{it} > a\}) = \rho E(\varepsilon_{it} 1\{\varepsilon_{it} > a\}) = \tau \rho E\left(\frac{\varepsilon_{it}}{\tau} 1\left\{\frac{\varepsilon_{it}}{\tau} > \frac{a}{\tau}\right\}\right) = \tau \rho \int_{a/\tau}^{\infty} x \varphi(x) dx = \tau \rho \varphi\left(\frac{a}{\tau}\right)$$

From (2) we then get the inverse Mill’s ratio

$$(3) \quad E(\eta_{it} \mid \varepsilon_{it} > a) = \tau \rho \frac{\varphi(a/\tau)}{\Phi(-a/\tau)}$$

Consequently, it follows that

$$(4) \quad E(\eta_{it} \mid T_{sit} > s+t) = E(\eta_{it} \mid g(T_{sit}) > g(s+t)) = \tau \rho \frac{\varphi\left(\frac{g(s+t) - q_{it}\gamma}{\tau}\right)}{\Phi\left(-\frac{g(s+t) - q_{it}\gamma}{\tau}\right)}$$

The q_{it} are macro-economic variables of the countries of origin as attractors for migrants who go back home (GDP growth in origin country)¹⁹ and of other possible destination countries (GDP growth in other preferred destination countries) as measures of job opportunities in other countries²⁰. Note that

¹⁸ Fertig and Schuler (2007) for instance use what we call a static Heckman correction, but their data set is very rich and they are able to control for the family ties with the origin countries, which frequently proxies the duration of stay abroad.

¹⁹ The attempt to introduce income dispersion in the origin country to capture the different income opportunity has been abandoned because of the difficulty of good time series income dispersion. http://www.wider.unu.edu/research/Database/en_GB/wiid/ presents a large amount of information on income dispersion but their time series dimension is not always reliable, and different values are frequently induced by changes in the methodology adopted, not by a real change in income distribution. The other dataset of Freeman and Osterdoorp <http://www.nber.org/oww/>, which has recently been used by Belot and Hatton (2008) and Grogger and Hanson (2008) does not use the panel structure of the dataset and calculates an average wage premium for each country using all the annual information available.

²⁰ For a description of the procedure used to compute a measure of other destinations see the Appendix

the selection term is the conditional expectation of the error term in the log wage equation, conditional on the length of stay T_{its} being at least as long as the length of time from arrival in the country to when the wage is observed. From (2) we then get that $s+t$ enters in the correction term. In estimating the log weekly wage equation we account for the possible selection by employing this duration version of the inverse Mill's ratio.

The second track taken in controlling for selection is the use of a proportional hazard rate function $h(t)$ for the probability of leaving the host country at time t conditional on surviving to time $t-1$. The proportional hazard rate model assumes that the covariates have a multiplicative effect on the hazard rate function, given the values of the covariates and the respective survival time (t). The reason for employing the hazard rate function is that it is an alternative specification for a selection term which also accounts for duration effects.

$$(5) \quad h(t_i) = h_0(t)g(q_{it})$$

where $h_0(t)$ is the baseline hazard function, the hazard for the individual when all independent variable values are equal to zero, and $g(q_{it})$ is a function of the covariates.²¹

The log weekly wage equation is augmented by a selection term for return migration:

$$(6) \quad Y_{it} = \alpha_i + x_{it}\beta + z_{it}\delta + k_{crt}\xi + m_{rst}\eta + \lambda_{it}\omega + \varphi_r + \phi_s + \varepsilon_{it}$$

where $[\lambda_{it}]$ is the duration version of the inverted Mill Ratio that capture selection when the selection model (4) is used; or the log of the hazard rate when the selection model (5) is chosen (note that in the first case $\omega = \tau\rho$);

$[\varphi_r]$ are region fixed effects, $[\phi_s]$ are sector fixed effects and $[\varepsilon_{it}]$ is an idiosyncratic error component. Note too that there are fixed effects in the wage equation, but not in the selection terms.

4. Description of the data and the variables used

The only longitudinal dataset which enables distinctions among different types of immigrants, foreign nationals and natives, is WHIP – *Work Histories Italian Panel*²², a database of individual work histories based on Italian social security (INPS) archives. The reference population is made up of all the people – Italian and foreign – who have worked in Italy even for only part of their working careers as employees or self-employed workers or who have received income support or pensions from INPS. Open-ended contracts in the public sector and selected professions which have autonomous social security funds (i.e. lawyers or notaries) are excluded (about 15% of the labour force). This limitation is not particularly important for foreign nationals, who are rarely employed in the public sector, where entrance is made more difficult by public selection exams. It is more important though for the analysis of the integration of native immigrants, especially women, who frequently participate successfully in these selection exams and who are assigned to jobs in other areas.

Only the WHIP section concerning dependent employment is used in this paper. This is a linked employer-employee database that combines individual and job characteristics from 1985 to 2003. It is a panel with no attrition because it is compulsory for firms to provide information about their workers to INPS. We thus restrict our analysis to dependent employment in the private sector. Besides public-sector employees and self-employed workers, workers in the agricultural sector (5%) and domestic

²¹ Generally, $g(x_i)$ is assumed to be equal to the relative risk $e^{x_i\beta}$. The model is estimated assuming $h_0(t)$ to be a Weibull distribution, thus $h_0(t)=pt^{p-1}$, where p is the shape parameter to be estimated from the data. Very similar results are also obtained without imposing $h_0(t)$ to be a specific distribution, following the Cox partial likelihood estimation.

²² Developed at the LABORatorio R. Revelli (more information can be found at www.laboratoriorevelli.it/whip).

workers (4.8%) are also excluded. This last limitation is important for analyses of foreign labour market integration because a large share of immigrants work in these two sectors: according to the ISTAT Labour Force Survey 2010, 3.9% of foreign nationals work in agriculture and 18.7% work as domestic workers. In particular, given the female monopoly in domestic services and its growing importance, the share of females among all residency or work permits is much greater (about 45-50%) than that reported in the WHIP dataset, where male employment dominates (84%). However, agriculture and domestic work have very high shares of illegal employment, and their exclusion from our analysis increases homogeneity across sectors. We should also point out here that studies on family migration describe female migrants as followers in the migratory process and as secondary workers. Hence we expect larger differences among the three groups in this case. This feature is not limited to foreign immigrants alone; it is also characteristic of native immigrants who were attracted to the North by a booming manufacturing industry, and whose families followed later.

For all these reasons we exclude women from our analysis. Moreover, in order to avoid measurement errors due to the limited number of observations for foreign nationals in the first years, we have restricted our focus from 1990 to 2003, when most of the foreign inflows started (see Figure 1). We have also restricted it to (male) workers aged 18-45 in order to compare foreign nationals with the most homogeneous group of Italian workers.

With this dataset we can distinguish among different types of workers: Foreign immigrants, Native immigrants and Locals.

1. *Locals*: workers who are mainly employed in their birth area;
2. *Native immigrants*: workers born in Italy who are employed in a geographical area different from that of their birth;
3. *Foreign immigrants*: Workers born abroad.

To identify native migrants we used four macro areas of origin and destination (North West, North East, Centre and South) to avoid, as far as possible, counting commuting workers as native migrants. Commuters are quite numerous, and according to the local register they do not change residency. Instead, by concentrating on changes in these macro areas in the identification of native migrants, we are in line with the Italian perception of native migrants as only long-distance migrants.

Foreign workers were selected by using place of birth: the dataset did not contain information on nationality. Only workers born outside Europe and the main industrialised countries were chosen, in order to avoid counting Italians born abroad as immigrants. Moreover, workers born in Argentina, Brazil and Venezuela²³ were also excluded, because those are countries with high Italian emigration and with large return migration flows from Latin America.

The variables in the dataset allow us to control for the age of the worker, gender, type of contract (open-ended, fixed-term, part-time), the skill level (blue-collar, white-collar, highly-skilled white-collar, manager), firm size, sector of economic activity, and territorial area. However, the dataset had some important limitations.

The main weakness of the dataset is the lack of an *education* variable. Though for native locals and immigrants we might expect that age and skill level would proxy the education level, for foreign nationals these two variables are unfortunately not enough. After all, the number of years spent at school would not be a good proxy for the educational level, nor, indeed, would it be a good proxy for the productivity of a foreign worker. After all, education quality is very difficult to compare inside a country and it is even more difficult across countries as Razin and Wahba (2011) have shown. We cannot use the Hanushek and Woessmann (2009) measure of cognitive differences because it is a time invariant variable which will disappear in the assimilation equation. In addition we had no information

²³ Procedure adopted for the first time in Gavosto *et al.* 1999 and also by Natale *et al.* (1999).

about the *time of arrival* of foreign immigrants. However, this problem perhaps can be countered. Foreign migrants did not enter Italy, in any great numbers, before 1985 (when our dataset started). In addition, they entered formal and legal employment by means of repeated amnesties. They were thus likely to have arrived on average two years before their first legal enrolment in the WHIP dataset. We are thus able to proxy the time of arrival that is included in the selection term.

Focusing on prime age males, the subjects of the assimilation analysis, we find that, on average, the wage of native immigrants is 6-10% higher than the wage of locals in all periods. However, this difference is never statistically significant (see Figure 3). The wage differentials between foreign nationals and either local or native immigrants are more irregular: they were quite stable during the 1990s, but they have increased since 2000. In 2003 foreign wages were on average about 75% of those of locals and about 70% of those of native immigrants; and, on average, from 1990 to 2003, foreign workers earned 21% less than natives and worked 20% less than natives (Venturini and Villosio, 2008).

The differences between foreign nationals and natives, both locals and internal immigrants, are, in large part, due to their different characteristics and the strong inflows of foreign migrants that Italy has experienced in the last years (Table 1).

Foreign migrants are younger than local workers, who are also younger than native immigrants. In fact, South-North migration took place mainly after the Second World War and continued then at a slower pace, while foreign migration is much more recent. Thus foreign workers make up the youngest group.

Native immigrants are relatively more present in the large and very large firms which dominated Italian development during the 1960s: while foreign migrants are concentrated in small firms, which, instead, dominated economic development during the 1980s and 1990s. Moreover, 25% of foreign migrants are concentrated in very small firms (1-20 employees) against respectively 7% and 11% for native immigrants and for locals. While native locals are employed throughout the country, native immigrants are mainly employed in the North West. During the 1960s, the North West was a booming Fordist industrial area which attracted labour from all over the country. Foreign nationals, instead, are mainly located both in the North West, and in the North East; the area which boomed during the 1980s and 1990s.

Blue-collar employment dominates in all groups, and for foreign nationals blue-collar work represents 93% of total employment. Blue-collar employment is also important among native immigrants because they moved to the North when labour demand was concentrated in large manufacturing companies. Finally, foreign immigrants are concentrated in the construction sector.

To capture the effect of human and social capital on wage assimilation two variables were put together $[x_{it}]$. The first referred to human capital accumulated on the job – experience in the current and previous jobs – and it was measured by the number of months in regular employment. The second variable measured the months spent out of the “job”. These months might have included periods devoted to education, employment in sectors not covered by the dataset, unemployment, irregular employment and, for foreign nationals, temporary return home. This second variable could, thus, play a positive role in the labour market, by capturing the acquisition of human capital in the underground economy or the acquisition of more general social capital outside the labour market. Alternatively, it could play or a negative role by reducing human capital accumulation. And the role would differ according to the group of reference. For locals, the periods of non-employment are expected to affect wages negatively, while for native immigrants this is not necessarily the case: they could acquire human capital working illegally or working in another sector or they could be unemployed and thus have a negative impact on wages. In the case of foreign immigrants the negative impact should be

lower because a longer presence in the host country, even if not in employment, might positively affect the migrant's social capital. Their social capital, then, in turn, helps on the labour market.²⁴

To control for the demand side and in particular for the different trends in different economic sectors, we included in our specification two macro-economic variables: the change in the log value added by sector and region; and the unemployment rate by region. This was done because we wanted to control for the different sector trends where workers were employed and also to see how this affected their wages.

Finally, the role of the migrant community in the destination area [k_{crt}] was captured by the share of the migrant worker community (nationality for foreign migrants and region of birth for native migrants) in total regional employment. Anderson *et al.* (2009) shows that the quantity and quality of the enclaves matter in the wage upgrade of foreign nationals. Hatton and Leigh (2007) stress the long-term effect of the community variable, and even employ ten-year lags. However, as migration in Italy is quite recent, we had too few observations to use long lags such as the one suggested by them.

5. Results

5.1 Return migration

According to our model, the first step in any empirical analysis is an estimate for the probability of foreign nationals leaving; modelled both with a duration version of the inverse Mill's ratio and with a hazard function.

The selection process is more likely for foreign nationals, while native immigrants are not different from locals in this respect. The hazard ratio of exiting definitively is 0.5 higher for foreign nationals than the hazard for locals and native immigrants. This is so even when individual, job and career characteristics are controlled for (see Table 2).

Though we do not exactly know their destination when leaving, it is likely that most foreign nationals move home or at least abroad. The literature shows that temporary migrations are frequent, and the rule rather than the exception (see Dustmann 1996, and Venturini 2007 for an overview). Even if, over the short run, they transit into unemployment or irregular jobs, if they are unable to find a legal job again, over the medium term they will leave the country.

The stronger effects of selection among foreign nationals rather than among natives points to the need to control for selection bias in the wage equation. The empirical results will show whether migrants are self selected, i.e. if they are the best or the worst in terms of unobservable skills and abilities.

In order to capture the pull factors of any migrant exit we included variables for the country of origin and for other possible destinations (for the description of how we computed the GDP growth of other possible destinations see Appendix A and Table A1), as well as the duration of stay.

The results when employing the duration extended Heckman selection terms show that the probability of leaving increases with the immigrant's presence in the host country. This is captured by the variable months spent in employment showing a positive sign (Table 3, i).

Similarly, the results from the hazard rate version of the selection process (see Table 3, ii) show a strong negative duration dependence (the probability of leaving increases the longer the migrant is in the country). This demonstrates that the choice of a hazard model for the selection equation is particularly appropriate. The hazard model was estimated by assuming $h_0(t)$ to be a Weibull

²⁴ The sum of the two variables is the best proxy available for the presence of foreign migrants in the country.

distribution thus $h_0(t)=pt^{p-1}$. The value of the shape parameter [p] estimated from the data was greater than 1 ($p=1.64$). This means that the hazard of failure increases over time. This result confirms negative duration dependence, and, therefore, the temporary character of the migration project.

Both models also suggest that economic growth in origin countries attracts emigrants back. Similarly, economic prospects in other possible destination countries positively affect the probability of immigrants leaving Italy.

5.2 Assimilation results

The second step in the analysis is the estimation of the assimilation equation augmented, for foreign nationals, by the selection term for return migration.

The equation is estimated by an OLS fixed effects estimate²⁵ to control for unobserved heterogeneity among individuals (results reported in Table 4).

As expected no striking differences are found among the three groups of workers. The Italian labour market is, in fact, quite closely regulated and collective agreements cover both unionised and non-unionised workers. However, since the 1993 Income Policy Agreement, wage variability has increased because firms are allowed to adjust their wage structure according to their economic performance and to local labour market conditions (Devincenti *et al.* 2008).

Starting from the selectivity control, the Inverse Mills Ratio coefficient (significant at 5% level) as well as the log hazard rate²⁶ (significant at 1% level) indicates a positive correlation between the error terms in the return decision and the wage function. Thus, the higher the expected weekly wage, the higher the probability of leaving. The unobservables that positively influence the wage of migrants, negatively influence their decision to stay. All things being equal, foreign workers who earn more are more likely to leave their present employment, while the less remunerated are less likely to abandon their present job. This result shows that the main factor driving permanent movement out of employment is the lack of opportunities and/or low incomes, and that their most likely destination is a foreign country²⁷. This kind of selection is not unusual in a comparative sense: it was found, for instance, by Constant and Massey (2003) in their analysis of guest-workers in Germany in 1984; by Fertig and Shurer's (2007) in some cohorts of migrants who arrived in Germany between 1969 and 1973, and among Finnish return migrants from Sweden by Rooth and Saarela (2007).

All the human capital variables are significant with the expected sign. The age variable is more important for locals, even if it declines at a higher rate, followed by native immigrants and foreign nationals, while experience on the job is more important for native immigrants than for the other two groups of workers and declines at a very low rate for foreign migrants.

Periods spent out of employment have a negative effect only for local workers' wages (as in Edin and Gustavsson 2008). They are not significant for native immigrants, nor, indeed, for foreign ones. Immigrants are the most mobile group in the labour force, so that foreign nationals may increase their social capital while they are out of employment and thus they do not necessarily lose in terms of total productivity. Nor are native immigrants negatively affected by their time off the job. This result highlights, as in the cases mentioned before, the importance of experience on the job in the assimilation of immigrants. It also underlines the fact that, for migrants, less damage is caused by time off a job.

²⁵ Note that, given our sample selection as explained in section 1 and the type of estimation described in section 2, the time invariant individual characteristics h_{irs} in the equation are eliminated.

²⁶ Since the average hazard rate is >1 (see table 2) the log hazard rate is on average positive

²⁷ The lack of information about the family in the origin countries looks less relevant.

Macro variables help explain the wage dynamics of the three groups of workers in different ways. Any value added in the sectors and regions pushes up the wages of all groups, but foreign migrants are more sensitive to this. The regional unemployment rate matters only for the local Italians: in fact, it slows down the wage growth of native locals. This result should not be surprising because unemployment is mostly made up of native unemployed workers with skills different from those of foreign migrants and less mobile than native immigrants: the inverse relationship between unemployment and wages holds only for local workers.

Last, but not least, the community variable is significant for foreign and native migrants, and has a negative sign. This is not an unusual result comparatively speaking: for instance, Hatton and Leigh (2007) and Danzer and Yaman (2012) found a negative sign for the community variable in the UK. If we recall that the variable adopted is not a proxy for the size of the total immigrant community, but represents rather the size of the worker community coming from the same area, the negative sign is less puzzling. The result points to a supply effect, which reduces wage growth more among foreign than among native immigrants. The variable measures the network effect which can favour the job match, but which can also create a segmentation effect which pulls down upgrading²⁸.

We now turn to the human capital variables and to the wage assimilation pattern of migrants. The cumulative effect of human-capital variables shows that foreign male migrants never assimilate with native migrants or with locals, because Italian age coefficients – for locals and native migrants – are smaller than theirs.

Figure 4 shows the accumulated effect of human capital variables on wages for the three groups of workers. The profiles of locals and native immigrants are not statistically different from each another, while they *are* statistically different from those of foreign nationals. A test for common coefficient restrictions was run on a pooled regression of (a) native immigrants and locals, (b) foreign nationals and locals. The null hypothesis that all the coefficients for native immigrants and foreign nationals are zero was accepted for native immigrants²⁹ and rejected for foreign nationals³⁰.

Workers from different groups start their career at the same wage level. However, as experience increases the profiles of foreign nationals and natives start to diverge, showing a wage gap of about 11% after 5 years of experience in the labour market and more than 18% after 10 years of experience. However, the graph does not include the periods spent outside employment, which have a negative effect on native wages which do not penalize native and foreign migrants.

To the best of our knowledge, our approach and the corresponding results are the first to address the assimilation of native immigrants. For though this issue has been discussed in the sociological literature, it has never been verified with a large dataset. What is more, the empirical results contradict the main conclusions of sociologists, Pugliese (2002), Paci (1973), Fofi (1975), which stresses the slight economic and social assimilation of native migrants. Our results suggest, instead, that the economic assimilation of native migrants cannot be questioned and only their social assimilation should remain on the research agenda.

Research in Italy has already shown that migrants do not assimilate to the same extent as natives: Venturini, Villosio (2008) with the same dataset; and Reyneri, Fullin (2012) and Dell'Aringa and Pagani (2011) employing several years of the Labour Force Survey, though no explanation of the differential was given.

The increasing differences between the wage profile of locals and foreign nationals suggests again the under-assimilation of foreign nationals. These do not close the wage gap with native immigrants.

²⁸ Interesting is the result of Lane (2009) where the network plays a positive role, if it is itself well assimilated and has a high probability of being employed.

²⁹ $F(1,356376) = 0.58$, $\text{Prob} > F = 0.4481$

³⁰ $F(1,323473) = 6.00$, $\text{Prob} > F = 0.0143$

They can be indirectly imputed to the initial differences in language and social capital. These, as we have seen, do not grow smaller with the time spent in the country, even if migrants likely improve their language skills and increase their social capital in the destination area. This is also imputable to the selectivity of the migrants who remain in Italy: these tend not to be the best.

It must also be remembered that native internal migration is older than foreign migration to Italy. The different time of entrance could play an important role in explaining the under-assimilation of the last wave of migrants. We, therefore, control for the time of entrance. An additional cause of under-assimilation not captured by the sector fixed effect is the type of job that foreign migrants typically undertake. Thus to control for this we define migrant intense sectors and perform the previous test on workers employed in those and other sectors.

5.3 Assimilation of entrants in employment in 1991 and 1992 for all groups

It is also necessary to control for heterogeneity in jobs available when migrants entered the labour market and thus the economic cycle. We, therefore, selected the native and foreign workers entering the labour market in the same years, 1991 and 1992, and followed their assimilation patterns.

Some of the results presented in the previous section may have been affected by the different economic cycles prevailing at the time of entrance into employment. This would have conditioned the future wage path and the future wage assimilation process³¹. Here is a typical problem in empirical analyses of migration. However, it becomes even more important in the case at hand because while native locals enter the labour market throughout the period, foreign nationals arrived in the late 1980s, while a large share of native immigrants did so in the 1970s. Of course, age and experience capture the human capital embodied by the worker and the macro variables capture different regional and sector economic cycles. But, in order to control more carefully for the differences in the assimilation pattern among the three groups, we selected a subsample comprising only workers that entered in the labour market in the same period. We thus perform the estimates only with workers who entered the labour market in the same two years: 1991 and 1992.

Table 6 sets out the results. Better controls for the economic cycle do not change the picture. As in the general case, the selection for return is positive, the age variable has a higher impact on wages for locals and the experience variable for native immigrants. Hence foreign migrants never catch up. The macro variables exert the effect already found in the general analysis: the value added is positive for all groups, and unemployment is effective only for locals. The community variable is significant only for the foreign group, where it is negative implying a negative agglomeration effect.

Compare now the results on assimilation in the subsample of the entrants in 1991-92 with the overall sample results. We find a similar non-assimilating profile between foreign nationals and natives, and a very similar profile between native migrants and locals. However, contrary to the general results, a wage differential between the three groups emerges at entrance too. For foreign nationals the gap with locals is 15% at entrance, rises to 23% after five years of experience, and reaches 26% after 10 years of experience, as Figure 5 shows. For native migrants the gap with locals is about 8% at entrance but it vanishes after 10 years of labour market experience.

The results seem again to show that the accumulation of human capital variables matter and that native migrants are better off because they are able to accumulate more human capital.

³¹ See for instance Bratsberg, Barth and Raaum, 2006.

5.4 Assimilation by jobs of entrance

Finally, to better understand the causes of the under-assimilation of foreign migrants we look at entrance onto the labour market. We divided locals and foreign nationals between those starting their observed career in sectors with high density of foreign workforce (the majority of foreign workers) and those starting in different sectors.

We looked separately at the wage profiles of workers who enter and spend most of their career in the “immigrant sector”. The vast majority of foreign workers in Italy are employed in low-wage manual jobs. The data used contains information on the sector of economic activity of the firm by three-digit level (more than 160 different sectors). This sector detail combined with the information on occupation (blue and white collar) allows us to characterise jobs in great detail. We computed the average share of foreign workers from 1990 to 2003 in more than 160 jobs identified by the combination of three-digit sector and blue collar occupation³². The variability in this share is very high. There are sectors in construction and manufacturing where the share of foreign workers is over 30%, even reaching 60%, while the presence of immigrants is almost null in many sub-sectors of the services. We define “Migrant sectors” as the 47 sectors in which the share of foreign employment is higher: 1.5 times the average share (i.e. higher than 15%)³³. These sectors employ more than 70% of the foreign workers in our sample, while, on the contrary they employ fewer than 40% of locals (Table 7). Locals in “migrants’ job” earn on average 22% less than workers in other sectors, and their wage differential with foreign immigrants in similar jobs is reduced to 4% from the average 12% reported in table 1.

In addition to being low-paid, “Migrant sectors” represent a trap for most foreign immigrants. In fact, almost all foreign nationals (84%) who start their working career in these sectors will never move to different jobs, while this happens for a still high 64% of locals who start their career in “migrant jobs”.

Our analysis by sectors defined as described, show that such sector segmentation is primarily responsible for the lack of assimilation between foreign nationals and locals.

If we compare the wage profiles of foreign nationals and locals who spend all their (observed) working career in such jobs, we find that they are almost similar (Figure 6, Figure 7 and Table 10). When confined to the “migrant sectors”, the effect of the accumulation of experience for locals is similar to that for foreign nationals and lower for local workers who work in other sectors. It is lower also with respect to those local workers who start in the “migrant sectors”, but who are able to escape from them later in their working life.

Thus, most of the non-assimilating profile highlighted in the previous sections comes from the difference in the jobs held by groups of workers at the beginning of their career. This has very little to do with linguistic and human capital accumulation.

6. Concluding comments

This paper has focused on the wage assimilation of male migrants in the Italian labour market. Italy has a recent history of foreign migration but a longer history of internal migration from the South to the North. The aim of the paper has been to understand the pattern of assimilation of foreign migrants with respect to native migrants, i.e. internal migrants, and locals. This is a unique opportunity, an experiment, where we can compare local workers and native migrants who are proficient in the language of the destination country but who are nevertheless migrants. Both groups of migrants have

³² As already pointed out more than 90% of foreign workers are employed in blue collar occupations (see Table 1)

³³ See table 9 for the listing of the sectors

been compared to native locals, who represent the linguistic benchmark and the social capital of reference.

For this purpose, we used the administrative dataset on dependent employment, WHIP, which enabled us to distinguish between foreign, local and native immigrant workers; a comparison not previously made. Moreover, by using this dataset we were able to build variables intended to capture human capital in the job and out of the job. A fixed effect model of log weekly wage of males aged 18-45, which controlled for unobserved heterogeneity and selection in return migration, was carried out.

In particular, two different methods to estimate return migration were implemented taking into account the duration of stay in the destination country: the Heckman correction model which is redefined in term of duration³⁴ and the Hazard rate model.

The results showed:

First, that native locals and native migrants experience only minor differences in terms of labour market assimilation. Thanks to this analysis, the first, which use a large dataset and an econometric technique, all the debate on discrimination (Pugliese 2002) and the segregation of internal migrants should be revised and limited to social assimilation because the differences in economic assimilation are limited.

Second, we saw the presence of a positive selection in the return decision. Those that are best able to earn higher wages are more likely to head home or to other destinations. There is a negative selection in the assimilation pattern with both measures: the Duration version of the Inverse Mills Ratio and the Hazard function. This should be kept in mind when considering the assimilation result.

Third, foreign workers have an entrance wage similar to those of natives. However, the accumulation of experience increases the wage gap with natives. Time out of employment does not negatively affect foreign wages, showing a possible general non-negative effect for the months spent out of the job, while it is negative for the natives.

Fourth, the concentration of a community has a negative effect on the economic assimilation of all migrants both foreign and native. This suggests that large interactions within the community of origin abroad disadvantage all migrants, but particularly foreign nationals.

Fifth, the assimilation behaviour of internal native immigrants and locals is very similar, and this result provides indirect evidence that language and social capital matter for economic assimilation. In order to better understand the reasons behind the under-assimilation of foreign migrants, two types of checks have been made. Given the different timing of the entrance of native migrants and foreign migrants we controlled for similar time of entrance by selecting a sub-sample made up of the entrants onto the labour market in 1991 and 1992. Second, we controlled the assimilation pattern within sectors by selecting the more intense immigrant sectors. The control of the entrance period confirms the under-assimilation of foreign nationals and the quasi assimilation of native migrants which seems to confirm the indirect evidence of the importance of language and social capital.

Last the analysis by sectors shows that native migrants and even local workers in the sectors where the migrants are concentrated have the same wage profile. The probability of not-exiting from these sectors is 84% for foreign migrants and 64% for natives. Thus it is not the lack of language knowledge or the social capital of the destination country which reduces the assimilation of foreign nationals. Rather they are limited by their starting employment sector, which means low wage and no career progress.

³⁴ The Heckman correction term using a duration approach was implicitly applied by Constant and Massey 2003, but it was not explicitly modeled.

This last result also sheds light upon the negative role of the community where regional and sector concentration interact causing the under assimilation of foreign migrants. In particular the negative selection of the foreign migrant group is explained by the difficulties that foreign migrants find in changing job. This encourages the best to go elsewhere in search of better opportunities.

To sum up, the comparison among the assimilation patterns of foreign and national migrants seems to confirm that return decisions matter in the assimilation dynamic. This is probably affected by the very limited career options that the jobs taken by foreign migrants offer, either to them and to the native locals and migrants. Sector segregation seems the key driver in the under assimilation of foreign migrants. Language and social capital probably also matter but much less so than sector segregation.

Thus selective immigration policies and language training could help in reducing foreign under-assimilation. However, they would help only if they allow foreign workers to escape from those work sectors where they are concentrated. These policies should also counter the negative role played by the migrant community itself, which probably reinforces employment participation in the high foreign migrant sectors. Given the rapid aging of the population, foreign migrants are set to become a permanent fixture and eventually citizens. Italy should invest in integration policies designed to prevent the formation of a closed group of foreign workers who have little chance of upgrading and who are characterised by community and professional segmentation.

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Appendix

A. Procedure used to compute GDP growth rate in possible destination countries

In order to build a measure of job opportunities in other possible destination countries (not exclusively European Countries) we use the growth rate of Real GDP *per capita* weighted by the flows of migration in the most chosen destination countries apart from Italy.

In particular for each nationality in our sample we first computed total outflow, then the share of flows towards each of the main destinations in each year, 1990-2003, then we weighted the annual growth rate of Real GDP *per capita* for each destination by this share. We obtained an indicator of the attractiveness of other possible destination for each group of migrants.

Table A1 shows the other main destination countries for the main origin groups in our sample.

Table A1.
Main destination countries and share of flows in 1990 and 2003 by origin (Italy excluded)

Origin group	Main destination countries (share of total flows in the first year 1990 and in the last year 2003 in parenthesis)
Albania	Germany (5.2; 4.9), Greece (94.8; 95.1)
Algeria	Belgium (2.8; 1.9), Canada (11.8; 7.2), France (57.5; 73.4), Germany (20.6; 6.6), Spain (2.4; 9.0), United States (4.9; 2.0)
Bangladesh	Australia (4.9; 5.7), Canada (4.5; 14.1), France (0.9; 2.1), Germany (10.9; 4.2), Spain (0.1; 2.5), United Kingdom (42.5; 37.1), United States (36.2; 34.3)
China	Australia (2.1; 3.1), Canada (5.3; 12.1), Germany (3.6; 5.3), Korea (43.7; 19.2), Japan (19.6; 30.7), Netherlands (0.7; 1.3), New Zealand (2.8; 2.0), Spain (0.5; 2.5), United Kingdom (0.7; 10.3), United States (20.9; 13.5)
Egypt	Canada (6.9; 8.4), Germany (8.8; 7.0), United States (14.3; 14.6), Saudi Arabia (70.0)
Turkey	Austria (5.0; 12.0), Belgium (2.1; 4.4), Canada (0.6; 1.7), France (3.1; 9.9), Germany (70.5; 57.2), Netherlands (10.7; 7.1), Switzerland (5.1; 3.2), United Kingdom (0.8; 1.1), United States (2.1; 3.5)
Tunisia	Belgium (8.1; 3.8), Canada (4.6; 4.9), France (35.8; 70.2), Germany (48.5; 18.2), United States (3.0; 2.6)
Pakistan	Australia (3.6; 2.9), Canada (9.6; 34.2), Germany (20.5; 9.1), United Kingdom (22.5; 27.7), United States (43.8; 26.1)
Sri Lanka	Australia (19.8; 13.6), Canada (18.9; 26.6), France (5.0; 8.2), Germany (43.5; 8.1), United Kingdom (6.0; 35.9), United States (6.8; 7.5)
Senegal	France (54.1; 43.6), Spain (13.9; 47.7), United States (32.1; 8.7)
Romania	Belgium (0.5; 1.0), Canada (3.0; 5.5), France (0.7; 1.6), Germany (85.0; 23.7), Hungary (5.5; 9.6), Spain (0.2; 55.0), United States (5.1; 3.7)
Philippines	Australia (4.3; 2.0), Canada (8.0; 6.6), Germany (2.3; 1.9), Japan (32.5; 51.6), Korea (8.9; 5.6), Spain (0.2; 0.6), United Kingdom (1.3; 6.6), United States (42.5; 25.0)
Morocco	Belgium (7.7; 9.5), Canada (2.4; 3.6), France (19.2; 25.3), Germany (16.1; 7.0), Netherlands (27.5; 5.0), Spain (20.1; 46.1), United States (6.9; 3.4)

Source: Own elaboration on SOPEMI data

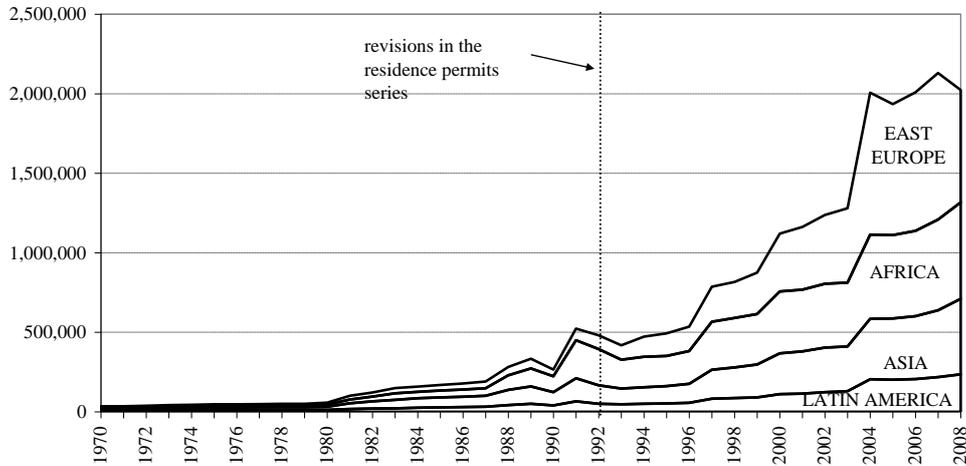
Table A2. Human capital, macro, community and return migration variables

Variables	Description	Source	Level of aggregation
Months of employment	Sum of months spent in regular employment up to year t since 1985 for natives and since entrance in the Italian labour market for foreign nationals	WHIP	Individual
Months out of employment	Sum of months spent out of regular employment up to year t since first employment spell observed	WHIP	Individual
Log VA	Logarithm of value added in t	ISTAT national accounts	Branch and Region
Reg. unemployment rate	Regional unemployment rate in t	ISTAT Labour force survey	Region
Share of reg. foreign employment	Share of foreign employment of the individual's same country of origin on total regional employment in year t	WHIP	Country of origin and Region
Growth rate of real GDP	growth rate of Real GDP per capita (Constant Prices: Chain series)	Penn World Tables	Country
Years of stay	Number of years of presence in Italy since entrance	WHIP	Individual
Age at entry	Age of foreign national when entering legal employment	WHIP	Individual

Note. Countries included: Albania, Bangladesh, Bosnia and Herzegovina, Bulgaria, Chile, China, Colombia, Cote d'Ivoire, Croatia, Dominican Republic, Egypt, Ethiopia, Hungary, India, Lebanon, Libya, Macedonia, Morocco, Pakistan, Peru, Philippines, Poland, Romania, Senegal, Somalia, Sri Lanka, Tunisia, Turkey, Ukraine, Uruguay

B. Tables and Figures

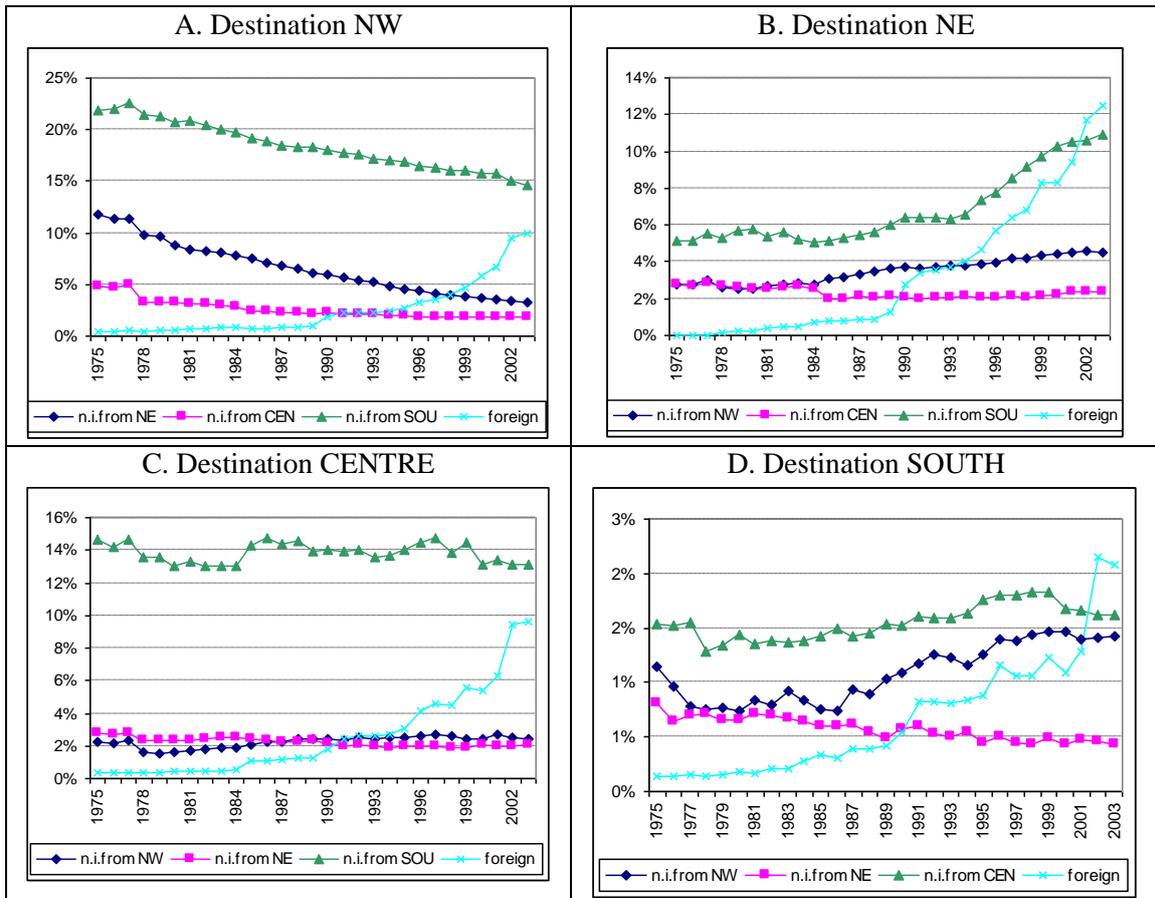
Figure 1. Stock of resident permits for foreign nationals by main areas of origin



Source: ISTAT

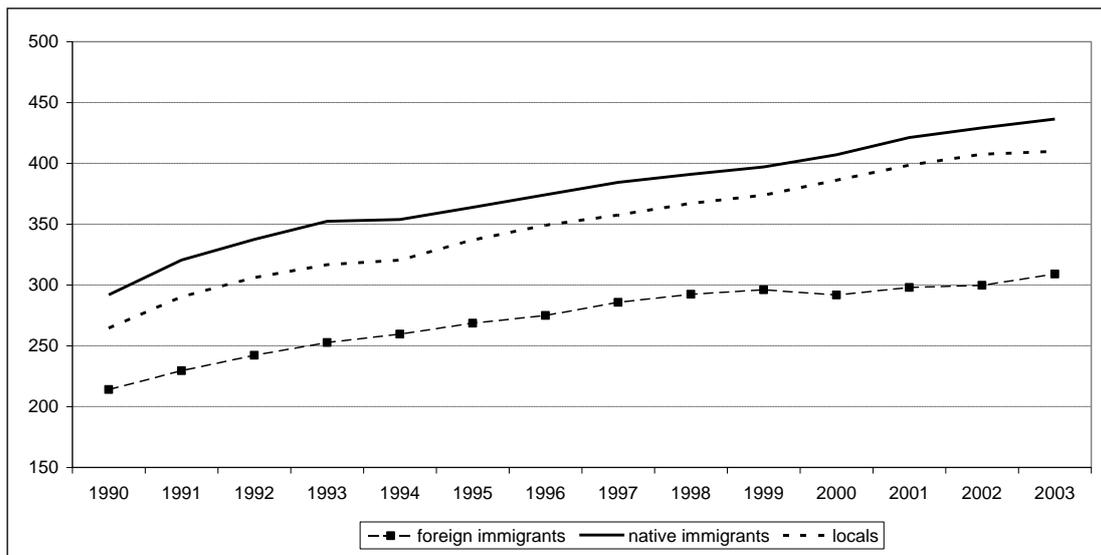
Figure 2.

Share of native immigrants and foreign nationals in total area employment by origin areas



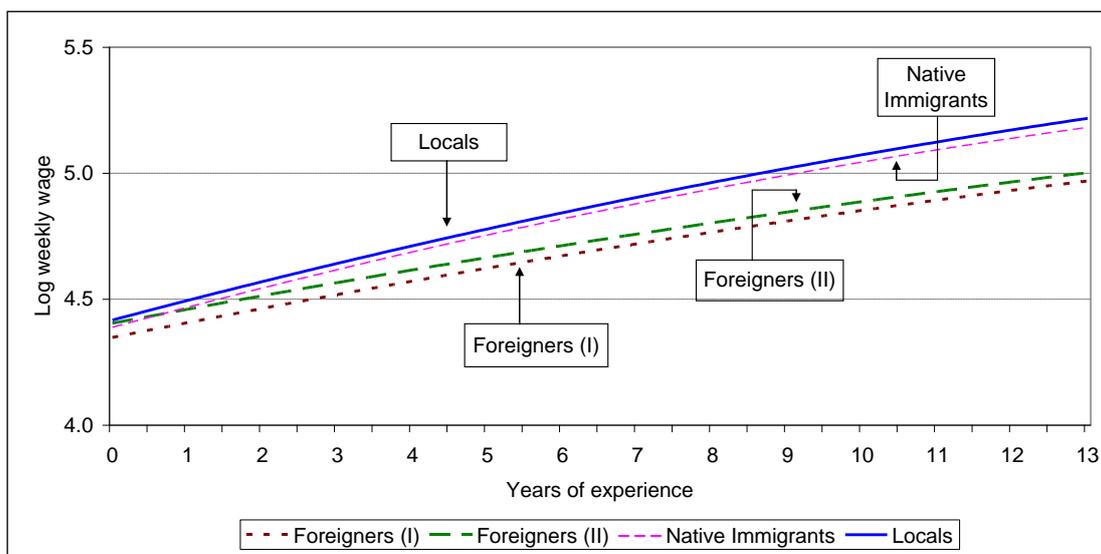
Source: WHIP and INPS data, own calculations

Figure 3. Average nominal weekly wage by groups - Male 18-45



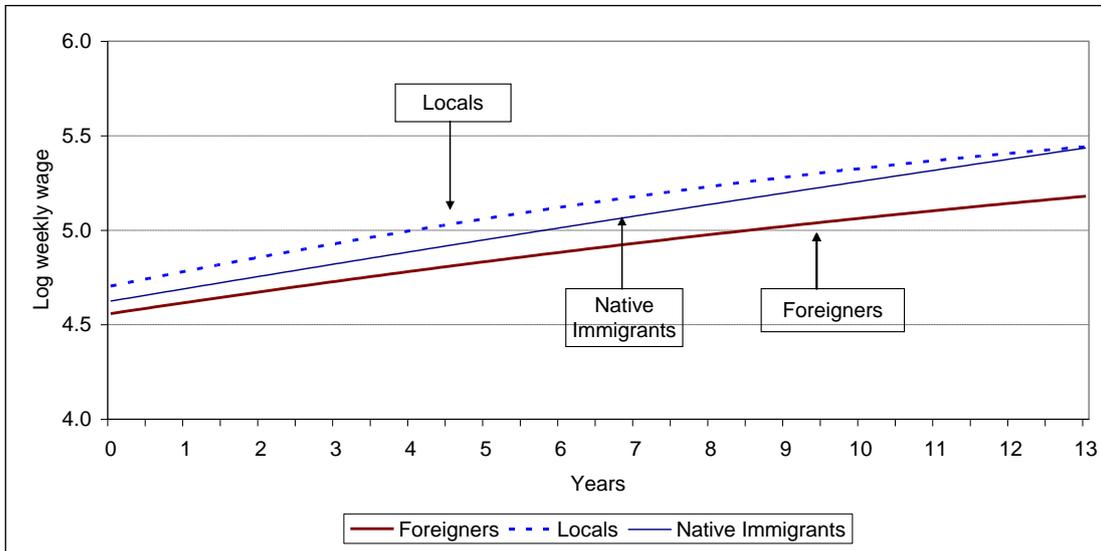
Source: WHIP, own calculations.

Figure 4. Experience- log wage profiles for foreign nationals, native immigrants and locals, blue collar males in manufacturing in the North West entering in the labour market at age 16



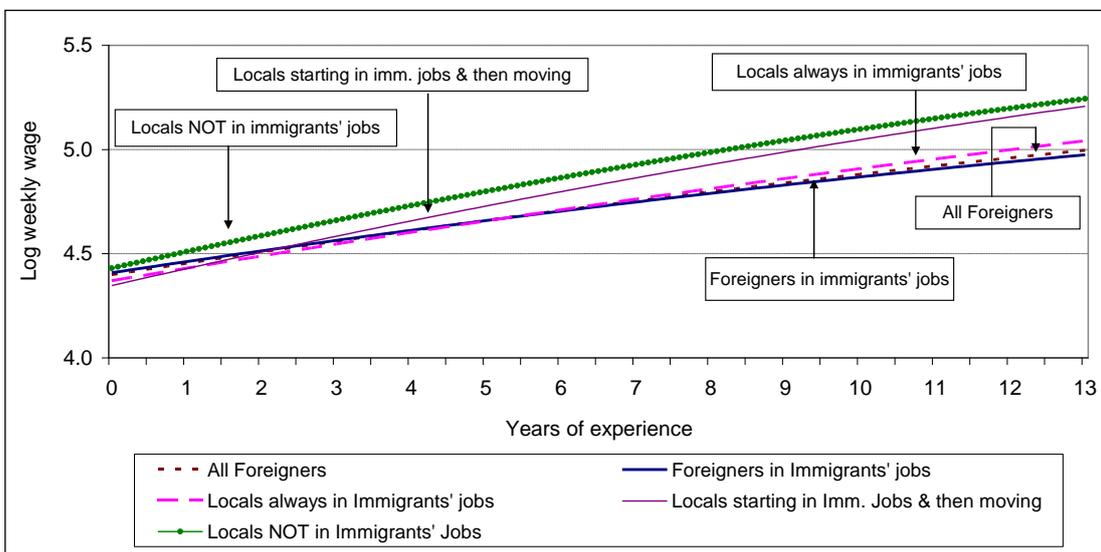
Source: WHIP, own calculations.

Figure 5. Experience- log wage profiles for foreign nationals, native immigrants and locals, blue collar males in manufacturing in North West entering in the labour market at age 16 in 1991 and 1992



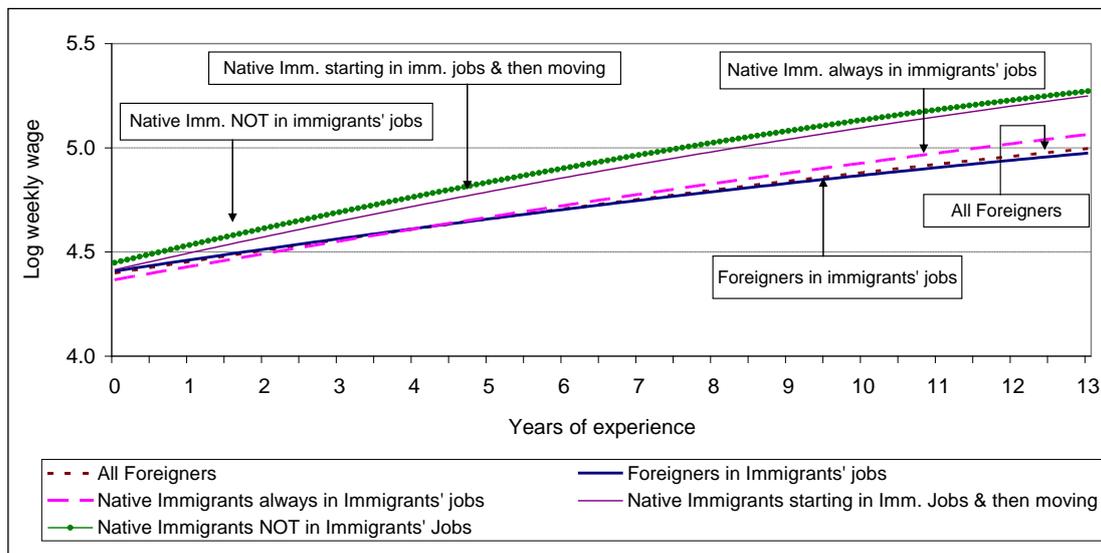
Source: WHIP, own calculations.

Figure 6. Experience- log wage profiles for foreign nationals, and locals, blue collar males in manufacturing in North West entering in the labour market at age 16 by type of jobs



Source: WHIP, own calculations.

Figure 7. Experience- log wage profiles for foreign nationals and native immigrants, blue collars males in manufacturing in north west entering in the labour market at age 16 by type of jobs



Source: WHIP, own calculations.

Table 1. Descriptive statistics 1990-2003 for foreign immigrants, native immigrants and locals

Variable	Foreign immigrants		Native immigrants		Locals	
	Mean	(Std. Err.)	Mean	(Std. Err.)	Mean	(Std. Err.)
Weekly wage	290.9	(119.6)	358.2	(202.2)	329.5	(182.4)
Age	31.79	(6.1)	31.79	(6.0)	30.85	(6.1)
Age at entrance	27.93	(5.5)	23.75	(4.4)	22.79	(4.1)
Months of employment	42.88	(38.4)	85.14	(57.4)	90.01	(58.4)
Months out of employment	10.27	(19.2)	19.65	(31.6)	15.13	(26.9)
Blue collar	0.93	(0.3)	0.68	(0.5)	0.64	(0.5)
White collar	0.03	(0.2)	0.30	(0.5)	0.32	(0.5)
Apprentices	0.03	(0.2)	0.02	(0.1)	0.04	(0.2)
Atypical	0.14	(0.3)	0.11	(0.3)	0.11	(0.3)
Firm size 0_20	0.58	(0.5)	0.40	(0.5)	0.45	(0.5)
Firm size 20_200	0.30	(0.5)	0.29	(0.5)	0.28	(0.4)
Firm size 200_1000	0.08	(0.3)	0.15	(0.4)	0.12	(0.3)
Firm size _over1000	0.05	(0.2)	0.17	(0.4)	0.14	(0.3)
North West	0.39	(0.5)	0.48	(0.5)	0.31	(0.5)
North East	0.37	(0.5)	0.25	(0.4)	0.23	(0.4)
Centre	0.18	(0.4)	0.21	(0.4)	0.19	(0.4)
South	0.05	(0.2)	0.06	(0.2)	0.28	(0.4)
Manufacturing	0.52	(0.5)	0.47	(0.5)	0.50	(0.5)
Construction	0.21	(0.4)	0.16	(0.4)	0.13	(0.3)
Services	0.27	(0.4)	0.38	(0.5)	0.38	(0.5)
Mediterranean Africa	0.26	(0.4)				
<i>Of which Moroccan</i>	0.14					
Africa other	0.25	(0.4)				
<i>Of which Senegalese</i>	0.22					
Latin America	0.03	(0.2)				
Asia	0.17	(0.4)				
East Europe	0.29	(0.5)				
<i>Of which Albanian</i>	0.17					
Avg. community size by region	0.63%	(0.6%)	2.4%	(1.6%)		
N. observations	44447		62484		371481	

Source: WHIP, own calculations.

Table 2. Results of a duration model on the probability of leaving the WHIP dataset

	Hazard Ratio
Foreign immigrants	1.5129 *** (0.0384)
Native immigrants	1.0256 (0.0173)
Locals	benchmark
N. obs	78157
Log likelihood	-45419.11
Chi2	49959.44
Prob>chi2	0

Dependent variable: Presence in the WHIP dataset in years.

Further covariates: age, age², weekly wage, occupation, tenure, firm size, sector, year of entry.

Robust standard errors in parentheses. * Statistically significant at the .10 level; ** at the .05 level; *** at the 0.01 level.

Source: WHIP, own calculations

Table 3. Results of the selection equation

	(i) Probit Random Effect model	(ii) Weibull Hazard Rate model
	Coefficient	Hazard Ratio
Growth rate of Real GDP p.c. in origin country	0.0093 *** (0.0022)	1.1084 *** (0.0104)
Growth rate of Real GDP p.c. in destination country	0.0446 *** (0.0079)	1.1251 *** (0.0140)
Months of employment	0.0103 *** (0.0015)	
Months of employment ²	-0.00004 *** (0.00001)	
Age at entry		1.0227 *** (0.0035)
p (shape parameter)		1.6658 (0.0243)
1/p		0.6003 (0.0088)
Predicted hazard rate (std. dev.)		0.2529 (0.4282)
N. obs	36663	8439
Log likelihood	-12579.15	-3182.37
Chi2	3700.22	4420.36
Prob>chi2	0	0

Dependent variable: probability of leaving (i) and duration of staying in years (ii)

(i) Includes in addition all variables in wage equation (see table 3).

(ii) Further controls: year of entrance, firm size, sector and region dummies

Robust standard errors in parentheses. * Statistically significant at the .10 level; ** at the .05 level; *** at the 0.01 level.

Source: WHIP, own calculations.

Table 4. Fixed effect estimates of log weekly wage in nominal terms, males aged 18-45

	Foreign immigrants (i) Correction= Inv. Mills Ratio		Foreign immigrants (ii) Correction= Hazard .Rate		Native immigrants		Locals	
	Coefficient		Coefficient		Coefficient		Coefficient	
Intercept	4.1203	***	4.4905	***	4.4935	***	4.5044	***
	(0.2282)		(0.2268)		(0.128)		(0.034)	
Age	0.0287	***	0.0302	***	0.0421	***	0.0527	***
	(0.0090)		(0.0089)		(0.008)		(0.003)	
Age ^2	-0.0002	***	-0.0002	*	-0.0002	***	-0.0003	***
	(0.0001)		(0.0001)		(0.00004)		(0.00001)	
Months of employment	0.0026	***	0.0022	***	0.0032	***	0.0022	***
	(0.0007)		(0.0007)		(0.0006)		(0.0003)	
Months of employment ^2	-0.000005	***	-0.000004	***	-0.000009	***	-0.000007	***
	(0.0000)		(0.0000)		(0.0000)		(0.0000)	
Months out of employment	0.0011		0.0008		-0.0004		-0.0006	**
	(0.0007)		(0.0007)		(0.0006)		(0.0003)	
Log Value Added	0.1587	***	0.0810	***	0.0616	***	0.0752	***
	(0.0285)		(0.0209)		(0.011)		(0.004)	
Regional unemployment rate	-0.0011		-0.0011		-0.0007		-0.0022	***
	(0.0009)		(0.0009)		(0.001)		(0.000)	
Share of regional foreign employm.	-6.0484	***	-2.9723	**	-1.6862	***		
	(1.5805)		(1.5191)		(0.577)			
Share of regional foreign empl. ^2	1.5879	**	0.5891		0.0953			
	(0.5408)		(0.5307)		(0.063)			
Correction for return migration	0.0291	***	0.0026	***				
	(0.0066)		(0.0008)					
N obs	27,933		27,933		60,678		359,527	
F	139.95		138.75		701.73		7193.68	
corr(u_i, Xb) =	-0.4546		-0.4307		-0.2465		-0.3909	
Prob > F =	0		0		0		0	
R-sq: within =	0.3631		0.3626		0.5261		0.604	
between =	0.0703		0.0719		0.1988		0.1751	
overall =	0.1468		0.1505		0.2720		0.2665	

Dependent variable: log weekly wage.

Further controls: type of contract, firm size, sector and region dummies. Robust Standard errors in parentheses. * Statistically significant at the .10 level; ** at the .05 level; *** at the 0.01 level.

Source: WHIP, own calculations.

**Table 5. Log wage profiles with increasing experience in the labour market.
Entrants in 1991 and 1992**

	Foreign nationals		Native immigrants		Locals	
	MEAN	(Std. err.)	MEAN	(Std. err.)	MEAN	(Std. err.)
Average N obs	3554		4878		27083	
Weekly wage in euros at entrance	213.5	(68.5)	253.4	(121.2)	226.9	(100.2)
Average weekly wage in euros in the 1991-2003 period	276.2	(102.6)	351.4	(185.2)	322.0	(154.3)
Age at entrance	28.8	(5.8)	27.6	(7.1)	25.4	(6.6)
Average number of months of employment in the 1991-2003 period	54.0	(42.4)	56.5	(43.0)	61.0	(46.2)
Average number of months out of employment in the 1991-2003 period	14.0	(21.2)	21.1	(28.3)	16.0	(24.7)
% Morocco	17.3					
% Senegal	25.9					
% Albania	3.8					

Source: WHIP, own calculations.

Table 6. Fixed effect estimates of log weekly wage in nominal terms for males aged 18-45, entrants in 1991 and 1992

	Foreign nationals	Native immigrants	Locals
Intercept	4.821 *** (0.1679)	4.509 *** (0.3300)	4.786 *** (0.1277)
Age	0.044 *** (0.0057)	0.063 *** (0.0050)	0.066 *** (0.0017)
Age ^2	-0.0005 *** (0.0001)	-0.0004 ** (0.0001)	-0.0003 *** (0.0001)
Months of employment	0.0009 ** (0.0004)	0.0016 *** (0.0004)	0.0012 *** (0.0001)
Months of employment ^2	0.00000 (0.0000)	-0.00001 *** (0.0000)	-0.00001 *** (0.0000)
Months out of employment	0.00000 (0.0000)	-0.002 *** (0.0006)	-0.001 *** (0.0002)
Log VA	0.061 *** (0.0186)	0.146 *** (0.0361)	0.053 *** (0.0140)
Regional unemployment rate	0.000 (0.0038)	-0.122 (0.0855)	-0.003 *** (0.0009)
Share of regional foreign employm.	-3.089 ** (1.3174)	0.495 (1.1834)	
Corr. for return migr. (Hazard Rate)	0.011 ** (0.0051)		
N obs	3554	4878	27083
F	78.26	34.33	507.59
corr(u_i, Xb) =	-0.3933	-0.1954	-0.3438
Prob > F =	0	0	0
R-sq: within =	0.4407	0.5222	0.589
between =	0.1219	0.1498	0.2466
overall =	0.2233	0.2484	0.3603

Dependent variable: log weekly wage.

Further controls: type of contract, firm size, sector and region dummies. Robust Standard errors in parentheses. * Statistically significant at the .10 level; ** at the .05 level; *** at the 0.01 level.

Source: WHIP, own calculations.

Table 7. Average wage by sectors. Average 1990-2003

	Foreign immigrants		Locals		% of foreign nationals on total employment
	Wage (std. err)	Share of employment	Wage (std. err)	Share of employment	
Sectors with high incidence of foreign employment (immigrants' jobs)	275.94 (82.9)	0.72	287.40 (99.6)	0.39	22.5%
Others	303.10 (129.0)	0.28	371.83 (174.7)	0.61	5.4%

Note:

Immigrants' jobs are defined on the basis of the NACE 1970 3-digit definitions of sectors and include: Construction of flats, office blocks, hospitals and other buildings, both residential and non-residential; Hotels and catering, Manufacture of structural metal products; Building completion work; Processing of plastics; Secondary transformation, treatment and coating of metals; Travel agents, freight brokers and other agents facilitating the transport of passengers or goods; storage and warehousing; Tanning and dressing of leather; Foundries; Manufacture of mass-produced footwear; Manufacture of ready-made clothing and accessories; Working of stone and of non-metallic mineral products; Manufacture of concrete, cement or plaster products for constructional purposes; Manufacture of rubber products; Manufacture of ceramic goods; Slaughtering, preparing and preserving of meat; Textile finishing; Manufacture of products from leather and leather substitutes; Forging; drop forging, closed die-forging, pressing and stamping; Miscellaneous textile industries; Knitting industry; Manufacture of agricultural machinery and tractors; Cleaning services; Manufacture of household textiles and other made-up textile goods; Sawing and processing of wood; Manufacture of clay products for constructional purposes; Manufacture of wooden containers; Dealing in scrap and waste materials; Bespoke tailoring, dressmaking and hatmaking; Manufacture of articles of cork and articles of straw and other plaiting materials; manufacture of brushes and brooms; Preparation, spinning and weaving of flax, hemp and ramie; Production of hand-made footwear; Silk industry; Other wood manufactures (except furniture); Laundries, dyers and cleaners and similar services; Processing and preserving of fruit and vegetables; Civil engineering: construction of roads, bridges, railways, etc.; Recreational services and other cultural services; Other metal workshops not elsewhere specified; Boilermaking, manufacture of reservoirs, tanks and other sheet-metal containers; Manufacture of tools and finished metal goods, except electrical equipment; Supporting services to transport; Cotton industry; Manufacture of carpentry and joinery components and of parquet flooring.

Table 8.a.**Fixed effect estimates of log weekly wage in nominal terms for males aged 18-45, by sectors**

	Foreign nationals in Immigrants' jobs	Locals always in Immigrants jobs	Locals starting in Imm. Jobs & then moving	Locals never in Immigrants jobs
Intercept	4.4834 *** (0.2391)	4.443 *** (0.0863)	4.4704 *** (0.0811)	4.5036 *** (0.0408)
Age	0.0463 *** (0.0033)	0.0473 *** (0.0017)	0.0539 *** (0.0024)	0.0454 *** (0.0012)
Age ^2	-0.0003 *** (0.00008)	-0.0003 *** (0.00003)	-0.0006 *** (0.00005)	-0.0002 *** (0.00002)
Months of employment	0.0007 *** (0.0001)	0.0011 *** (0.0002)	0.0024 *** (0.0002)	0.0029 *** (0.0001)
Months of employment ^2	0.00000 (0.00000)	0.00000 *** (0.00000)	0.00000 *** (0.00000)	-0.00001 *** (0.00000)
Months out of employment	0.0004 (0.00065)	-0.0002 *** (0.00003)	-0.0003 *** (0.00004)	-0.0001 *** (0.00002)
Corr. for return migr.	0.0018 ** (0.00104)			
N obs	16101	68101	39517	251909
F	87.01 ***	1243.14 ***	786.55 ***	6196.87 ***
corr(u_i, Xb) =	-0.5959	-0.4578	-0.3973	-0.2875
Prob > F =	0	0	0	0
R-sq: within =	0.3243	0.5115	0.5604	0.6377
between =	0.022	0.0447	0.1172	0.3365
overall =	0.0671	0.1552	0.2824	0.4017

Dependent variable: log weekly wage.

Further controls: type of contract, firm size, sector and region dummies. Robust Standard errors in parentheses. * Statistically significant at the .10 level; ** at the .05 level; *** at the 0.01 level.

Source: WHIP, own calculations.

Table 8.b.

Fixed effect estimates of log weekly wage in nominal terms for males aged 18-45, by sectors

	Foreign nationals in Immigrants' jobs	Native immigrants always in Immigrants jobs	Native immigrants starting in Imm. Jobs & then moving	Native immigrants never in Immigrants jobs
Intercept	4.4834 *** (0.2391)	4.440 *** (0.2266)	4.480 *** (0.2086)	4.522 *** (0.1201)
Age	0.0463 *** (0.0033)	0.0542 *** (0.0044)	0.0349 *** (0.0060)	0.0423 *** (0.0038)
Age ^2	-0.0003 *** (0.00008)	-0.0004 *** (0.00008)	-0.0004 *** (0.0004)	-0.00009 *** (0.00006)
Months of employment	0.0007 *** (0.0001)	0.0008 *** (0.0004)	0.0039 *** (0.0005)	0.0036 *** (0.0003)
Months of employment ^2	0.00000 (0.00000)	0.00000 (0.00000)	0.00000 (0.00000)	-0.00001 (0.00000)
Months out of employment	0.0004 (0.00065)	-0.0004 (0.00008)	-0.0002 (0.0001)	-0.0001 (0.00005)
Corr. for return migr.	0.0018 ** (0.00104)			
N obs	16101	15912	7523	37243
F	87.01 ***	21608.7 ***	118.15 ***	594.58 ***
corr(u_i, Xb) =	-0.5959	-0.4971	-0.3512	-0.2707
Prob > F =	0	0	0	0
R-sq: within =	0.3243	0.4398	0.517	0.5745
between =	0.022	0.04	0.1263	0.238
overall =	0.0671	0.1204	0.305	0.2821

Dependent variable: log weekly wage.

Further controls: type of contract, firm size, sector and region dummies. Robust Standard errors in parentheses. * Statistically significant at the .10 level; ** at the .05 level; *** at the 0.01 level.

Source: WHIP, own calculations.

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