Are Foreign Migrants more Assimilated than Native Ones?

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Abstract

The paper focuses on wage assimilation of male immigrants in the Italian labour market. Italy has a recent history of foreign immigration and a long history of internal immigration from the Southern regions to the North. The objective of the paper is to understand the pattern of assimilation of foreigners and of native immigrants to local natives. We use the administrative dataset on dependent employment, WHIP, which allows us to distinguish workers into three groups: foreigner workers, locals and native immigrants, a comparison not yet exploited. We estimate a fixed effect model of weekly wage of male 18-45 years old which controls for unobserved heterogeneity and introduced both macroeconomic controls and the dimension of the ethnic community of workers. Our results show that the three groups of workers are not very different, as it is expected in a country with a strong centralized bargaining. Native immigrants are always just a little below locals.

Foreign workers have lower entrance wages than natives, but accumulation of both human capital and social capital contributes in reducing their wage gap. The sector and regional economic growth affect positively all workers, while the unemployment rate has a negative effect only on the locals wage, the one who do not mouve. The dimension of the migrant community in the destination labour market when significant plays a negative role, suggesting a supply effect in a segmented labour market.

When to better control the economic cycle, we take all the workers entered in the labour market in the same year 1990, we have similar results: the foreigners never reach the native immigrants and locals.

What thus emerges is that language and knowledge of the social capital matter in the assimilation (Native immigrants are much closer to Locals than Foreigners) but something else remain (Native immigrants never reach Locals).

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1-Introduction

The objective of this paper is to contribute to a better understanding of the assimilation pattern of foreign migrants in Italy. We compare foreign migrants not only with native workers but we distinguish the natives into native migrants and native locals (who work in the same area of birth). The comparison is interesting because contrary to foreign migrants, native immigrants are supposed to know the language and to share the social capital of the destination area, thus they should not be disadvantaged relative to national local workers or they should at least be less disadvantaged. Employers, however, do not know any individual productivity but it should be easier for them to assess the local native productivity while more difficult to assess the one of immigrants either native or foreigners, thus in this respect native immigrants and foreigners are similar and could be treated in a similar way.

Italy is very well known for its long tradition of international and internal migration[2] and much less known for his quite recent but not too recent experience of immigration. Foreign migrants started to choose Italy as a destination country at the end of the '70s, when the Northern European countries after the first oil shock adopted a restrictive immigration policy which made more difficult the entrance of foreigners in their labour markets. The inflows to Italy and in general to the Southern European countries became more and more important later on. Migrants initially came mainly form the neighbouring areas (North Africa) and from the far away Asia (mainly Filipinos) and Latin America. With the fall of the Berlin wall the inflows from the Eastern European countries started. Initially the migrants came from the very close Albania, but later they arrived from the more far away Romania, Moldova attracted by the similarity of the language and also from the far away Ukraine (See Figure 1).

Figure 1 Stock of resident permits for foreigners by main areas of origin
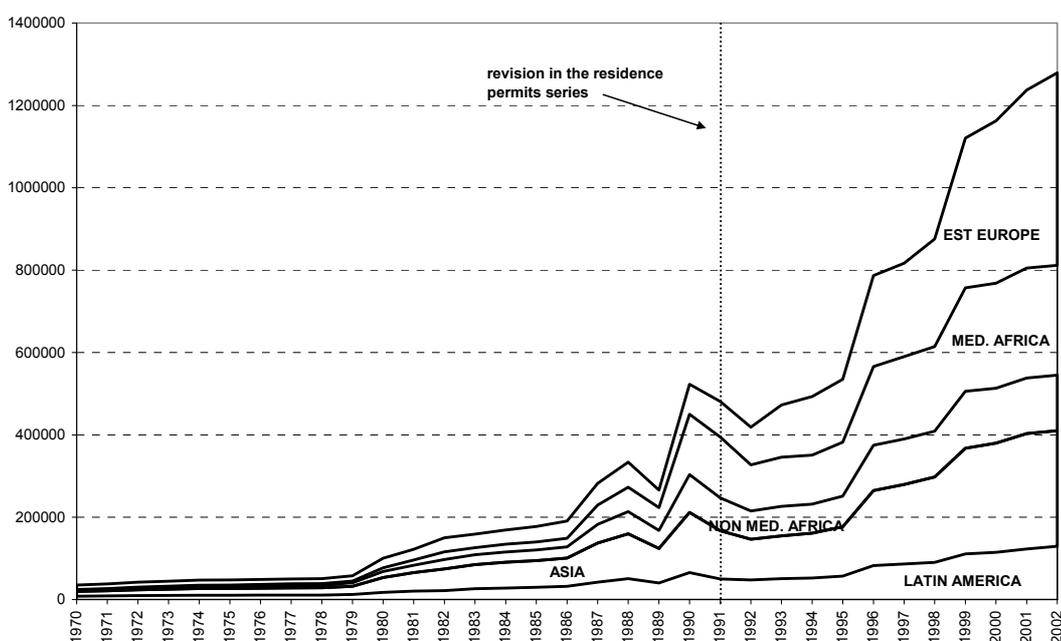
Source: ISTAT

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[2] For a survey see Del Boca Venturini 2005.

They entrance took place frequently illegally and frequently their regular position is the results of many amnesties that the Italian Government granted (see Table A1 in the Appendix for information on the amnesties). To become legal the migrants should show a regular job offer and to get it usually they have worked illegally for at least a couple of years. Even if the Government announced a number of regular permits granted each year, the number was always insufficient to satisfy the supply of immigrants but also insufficient to satisfy the national demand of immigrants, thus the illegal entrance became the main gate of entrance in the country and the amnesties were granted ex-post to solve the illegal position of many foreigners with a "regular but not legal" job. The repetition of the amnesties, a policy however shared with the other Southern European countries, creates the expectation of additional sanatoria and augmented the difficulties in controlling the migratory phenomenon. The strong reaction of the native population against larger legal and official inflows - which instead is the main road to follow - was accompanied by the belief that it was impossible to control the border. The information that we refer to in Fig.1 and the ones presented later in the paper are derived from the residence permits, thus cover only the legal ones, and the estimates on the illegal ones has been proven to fail a lot, but varies from 10 to 40% of the legal one (Strozza, Venturini, 2002).

At the 2001 Census 61.8% of the foreign residents where resident in the North while only 25% in the Center and 13.2% in the South and in the Islands[3]. They hold in general unskilled position even if in few cases they have higher educational degree. Men usually work in the construction, in the agricultural and in the industrial sector while women work in the family services and in the services in general while few work also in industrial activities.

Foreign migration has however been a recent phenomenon for the country and for the population because Italy has a long tradition of international emigration: first oversees to the Americas than mainly to the Northern European countries. In addition Italy also experienced an extensive internal migration, form the less developed areas of the South but also of the East to the richer areas of the North West. Emigration from the South to the Northern regions represented 33% of Southern employment. With the II World War the international migration ceased and only in Europe and in the country migration remained, which however went on at a lower pace. Migrations between Northern and Southern Italy have fallen steadily from the '70s despite the substantial increase in the unemployment differential.

Figure 2 presents the last '30s years of the internal migration of natives. The information are derived form the ISTAT Local registers which report the change of residency, thus only flows data exist at this level of aggregation[4]. North West is by far the area where most of the inflows arrived. Emigration took place mainly from the Southern areas in all possible destinations notably the North West and the Centre. Destination of the North East inflows has been mainly the North West while a not negligible amount of people went from the North West to the South. Finally inflows from the Centre have been irrelevant throughout the period.

After a long period of decline, in the second half of the '90s inflows took a new strength in all the possible destination areas, especially in the North East.

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[3] Just to remind Italy does not have a tradition of large European inflows as for instance Greece and Spain, and at the beginning of the '70s the lager amount of foreigners was located in Rome where communities from former colonies where based (Ethiopia and Eritrea) etc.
[4] Stock data are not available.

Figure 2 Absolute gross flows of native immigrants by destination areas

A. Destination NW	B. Destination NE
C. Destination CENTRE	D. Destination SOUTH
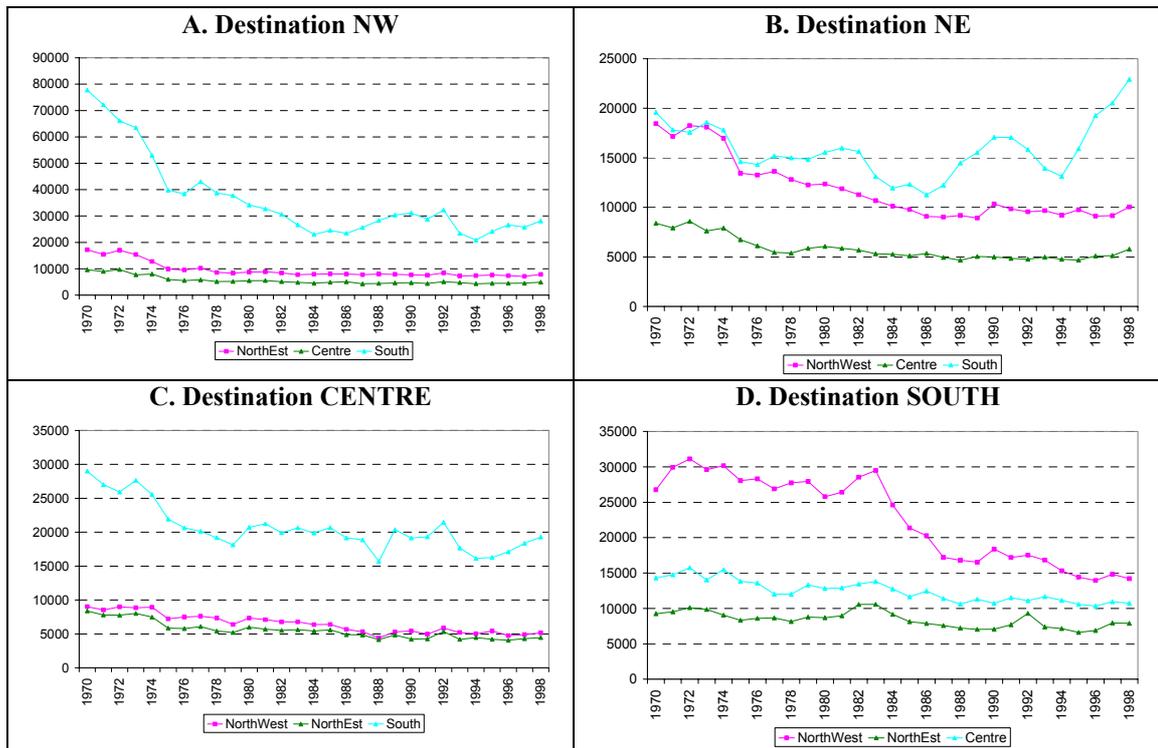
Source: ISTAT- Local registers

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 be driven by a combination of demographic factors, high mobility costs and inefficiencies in the job matching process that are sufficiently strong to offset the influence of rising unemployment differentials. Also by Attanasio and Padoa Schioppa (1991) point out the role of mismatch in the labour market to explain the low mobility and the high unemployment in the South.

After 1995, however, interregional mobility has been increasing. Piras (2006) using information on change of residency reported at the local registers shows that the propensity to emigrate increases with the level of education and that there is evidence of brain drain from Italian Southern regions.

This last source which is the only one available in a long time series reports the number of both workers and family members who change their residency, and no labour information, thus is not suited for any assimilation study. We overcome this problem by using WHIP – Work Histories Italian Panel – which allow us to discriminate workers on the basis of their place of born.

The local labour force and the local employed can be divided in three types of workers: **local workers** (born and working in the same area), **immigrant natives** (born in a different area from the working one) and the **foreigners** (born abroad and working in the region).

This Italian specificity allows the comparison of economic integration between foreign immigrants and Italian immigrants who should known well the domestic language and the social norms (social capital) which favour the social and the

economic assimilation. And, in addition, we can compare the assimilation of foreigners and of native migrants with the local natives.

The paper is organized as follows, section 2 present a brief survey of the assimilation theory, section 3 describe the dataset and the wage trends, section 4 describe the model of assimilation adopted and the estimation strategy and section 5 presents the results for all the sample and only for the entrants in the 1990-1991. A concluding chapter close the paper.

2-Litterature survey

The literature on wage and employment assimilation is very old. In UK the study of the integration of the ethnic minority has a long tradition in sociology and also economics but the availability of new datasets has given new strength to the issue which has very important and urgent policy implication. Our days migration policy is going together with the integration and assimilation issue, a country is unable to propose a policy of open border if the previous experience of foreign immigration is not successful.

The literature on the economic assimilation of immigrants starts with the pioneering work of Chiswick (1978) and the seminal contribution of Borjas (1985) and La Londe and Topel (1992) - were all based on the USA case and they all used the information included in the USA Census.

Differences in the results (over-assimilation or under-assimilation) depended upon the amount of information available and in the type of control introduced[5]. The over assimilation[6] was attributed to the fact that migrant workers are positively selected, that is, they are more entrepreneurial, more talented and less risk averse. However by using one census the immigrants catch up and overtake of natives could just be the result of immigrants belonging to cohorts of different quality or by the different economic cycle upon arrival. George Borjas (1985)[7] reveals a phenomenon of 'under'-assimilation of immigrants in the USA which 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 alters the nationality mix of immigrants and thus gives rise to change in their productivity; and changes in the composition of the cohorts due to non-casual repatriation. The same result of under-assimilation was revealed by La Londe and Topel (1992) but it was attributed to the worse economic conditions in the receiving country at the time of arrival. Fundamentally when the foreigners entered the labor market offered their labor at a lower entry wage and had few career prospects.

This debate is conditioned by the rich set of information available in the USA Census, which pushes researchers to solve all these methodological problems where longitudinal data would be the appropriate way of approaching this issue. The research on a true longitudinal data set by Lubotsky (2000), however, reaches similar

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[5] The differences belong to the coefficients of the dummy which represents the wage of foreigners upon arrival and of the variable number of years that the migrants has been resident in the destination country which indicate the differential rate of growth of immigrants wage.

[6] Chiswick 1978.

[7] He Used two censuses to control for the different quality of the immigrants cohorts.

conclusion, immigrants wage increases (by about 10-15% in the first 20 years in the US but not enough to offset the 35-40% of immigrants-natives wage differential.
The assimilation is function of the immigrants human capital, while college degree immigrants earn 30% more than the average natives, immigrants who arrive with low level of schooling never succeed in reaching the earnings of the average natives (Card 2004).

David Card (2004) 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 if immigrants working in the USA labour market earn today less than natives (but not a lot less), and the different education levels explain 10% of the gap, the second generation increases its education level, with a generational transmission of education (effect of the education of the father on the education of the son or daughter) equal to the one of the other family.

The modern economic European research starts a little later and is mainly based upon national panel data.
The first set of relevant variables is related to the human capital of the immigrant. This concerns the immigrant's *education* before arrival, and after arrival, his/her *acquisition of human capital on the job* before and after immigration, and last but not least his/her *proficiency* in the language of the destination country, which also favors the second generation's integration. Chiswick (1991) found crucial in the assimilation in the British labour market the knowledge of the natives' language, result confirmed by Shields and Wheastley Price (2002) in a more recent study and pursued by Dustmann Fabbri in 2003. In a study involving Denmark[8] Neilson, Rosholm and Smith (2000) found that a foreigner's job assimilation increases, 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), in the Dutch case, concludes that one of the causes of the lack of assimilation is that few immigrants continue their studies in the receiving country. Also Grainer and Marciano (1975) in the French case using data from the 1968 census in a descriptive way reach the same conclusions, and suggested that the lower average wage for foreigners with a nuclear family is mainly due to less investment in human capital and this varies substantially according to ethnic groups.

The results of the wide empirical research on the issue are difficult to compare because the dataset varies with the reference country. It is also is very difficult to measure the quality of the education received in the origin country. The variable 'years of *education*' is a very rough indicator of an immigrant's human capital. This also explains why years of education in the destination country, when such information is available, performs much better in explaining the foreign wage upgrading. The variable 'country of origin' frequently proxies the average quality of human capital or the foreign worker's potential linguistic proficiency and the inclusion of the variable *years of presence in the destination country* could proxy foreigner's increase in general human and social capital which as well favor the assimilation process.

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[8] They used administrative data testing a random effect model on foreign wages.

A second set of relevant variables refer to the *labour market variables* which determine the worker's future prospect. Not only is the economic cycle upon arrival in the labor market crucial for the immigrant's assimilation but also the sectors of employment, which are affected in different ways by technological innovation. Rosholm, Scott and Husted (2000) found that, both in Sweden and Denmark, between 1985 to 1995 job opportunities for male immigrants deteriorated. However, they used a panel of administrative data which showed that the worsening situation was independent of the different market trends in the two countries. It was instead due to structural changes in the markets, where the labor demand was for workers with high interrelation and communication skills, which meant that immigrants were at a disadvantage.

A third set of variables refer to the migration and the assimilation policies implemented to favour migrants integration. The study by Pennix, Schoorl and vam Praag (1994) on Holland highlights two perverse effects which has reduced a foreigner's ability to assimilate and to achieve wage integration after the mid-1970s. First, the slow-down in the national business cycle has made new immigrants difficult to absorb (fall in demand). Second, immigrants are different in nature – not in terms of quality understood as human capital but because they are *political refugees or family members* joining their kin: this has changed the nature of immigration, transforming it from labour migration to residential migration. Additional policies have been implemented to reduce the slowdown of foreign assimilation: for instance, the attempt to discourage their agglomeration in particular areas, which is considered a cause of low linguistic proficiency and as reducing the incentive to move in search of better job opportunities. In the North European countries the distribution of refugee immigrants around the country seems to be less efficient in integrating foreigners than the previous agglomeration[9].

This last point recall the importance of the community approach which stresses the importance of the ethnic community in assimilating the foreign immigrants present in Borjas (1992 and 1995) and revitalized by Hatton and Leigh (2007) who abandon the individual analysis of the assimilation and shift to the analysis of assimilation of the community.

Covering all the different and complex variety of analysis is impossible, we want just to recall the importance of the reference group which induced controversial results in the German case by using the individual panel date set GSOEP. The empirical study carried out by Dustmann (1993) showed lower earnings for foreign workers during all their working life and the author reconducts such a finding to the temporary nature of the migratory flow which discouraged the investment on the job of the migrants and his search for better opportunities. This conclusion was contradicted by an analysis of the same dataset by Schmidt (1993), which showed that a foreign worker's earnings are equal to a native worker's earnings after a period of 17 years. Pischke (1992) finds that there is no difference in the rate at which incomes grow between foreigners and natives in comparable jobs, even though foreigners never reach the same wage level as the natives.

The different findings depend on the reference group with which the foreigners are compared and as Dustmann has used all natives, white collar and blue collar workers, the lack of convergence can be explained by the low skills of the foreigners.

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[9] Husted L., Nielsen H.S., Rosholm M.,Smith N. 2001Employment and Wage Assimilation of Male First Generation Immigrants in Denmark International Journal of Manpower, , pp.39-68.

3-Description of the data used

We use the dataset WHIP – *Work Histories Italian Panel* [10] a database of individual work histories, based on Italian social security archive (INPS). The reference population is made up by all the people – Italian and foreign – who have worked in Italy even only for part of their working career as employees or self-employed or have received income support or pension by INPS[11]. Only open end contracts in the public sector and selected professions who have an autonomous security fund (i.e lawyers or notaries) are excluded. This limitation is not very relevant for foreigners who are rarely employed in the public sector, where the entrance is made more difficult by the presence of national public competition, while it is more relevant for the analysis of the integration of native immigrants which frequently participate successfully to national competition and were assigned to jobs in other areas.

In our analysis we use the WHIP section concerning dependent employment which is a linked employer employee database. Thus in addition to the data about individual and job characteristics, data concerning the firm in which the worker is employed is also available. The observed period goes from 1985 to 2003.

Since our analysis is restricted to the dependent employment in the private sector, in addition to public employment and self-employment, also workers in the agricultural sector and house keepers are not covered.

This last limitation is important for the analyses of foreign labour market integration because an important share of immigrants works in these two sectors Agriculture 3.8% and family workers 12%[12]. In particular given the female monopoly of the family services and its growing importance, the share of female in the number the total residency or work permits is much larger (about 40-45%) than the one reported in this dataset where male employment dominate (84%). However Agriculture and Family work have very high share of illegal employment and not having them in our analysis increase the homogeneity among the sectors.

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

1. *Locals* : workers who are employed in the geographical area of birth[13]
2. *Native immigrants***:** workers who are employed in a geographical area different from that of birth
3. **Foreign immgrants***:* Workers born abroad

Foreign workers have been selected by using the place of birth. Only workers born outside Europe and the main industrialised countries have been chosen in order to avoid counting Italians born abroad as immigrants. Moreover, following Natale, Casacchia, Strozza (1999), also workers born in Argentina, Brasil and Venezuela, are

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

[11] There is no attrition in this archive, if we exclude updating problems, i.e. delays in the acquisition of information from the firms. It is compulsory to provide records on employees and firms to the social security administration, if the worker and the firm belong to one of the mentioned categories.

[12] The percentages refer to 2002 information of the INPS archive 147.000, but for the following year the demand were already the double.

[13] We define 4 geographical areas: North-west, North-east, Centre, South

excluded because those are countries of strong Italian emigration and with large return migration flows from Latin America[14].

We restrict our analysis to the period 1990-2003, when most of the foreign inflows started (see figure 1). In our dataset there are too few observations for foreign workers in the first years and thus results could be influenced by measurement errors. By considering only years in which the stock of foreigners is sufficiently high, the incidence of these possible errors is as lower as possible. Moreover, we **exclude women** because, as already mentioned, our dataset does not include employment in the public sector where a large share of native female workers is employed, nor family services where a large share of female immigrants is employed.

We choose as geographical reference unit macro-areas, in place of the regions, to avoid as far as possible commuting workers who are very numerous. We do not want to overestimate native migrants which in the Italian culture mean only long distant migrants. By adopting the macro area dimension we avoid commuting workers that for instance live in (Novara) a border city of a region very close to the core of another one (Milan), and that according to the local register do not change residency.
The variables in the dataset allows to control for the age of the worker, the gender, the type of contract (open-end, fixed term, part time……), the skill level (blue, white, high skilled white, manager), firm dimension, sector of economic activity and territorial areas.

Unfortunately the dataset does not include any education variable and if for native locals and immigrants we can expect that age and skill level could proxy the education level, for the foreigners unfortunately these two variables are not enough. We have to consider, however, that the number of years spent at school would not be a good proxy of the educational level and of the productivity of a foreign workers because the quality of the education is very different to compare, but in addition the ready usable education depends upon the ability in the language used in the host country[15].

In addition, we have built two variables to capture the increase in **human and social capital**. The first refers to human capital accumulated on the job – experience in the current and previous jobs – and it is measured by the number of months in regular employment. The bulk of immigration into Italy started in 1987, so that foreigners are likely to be observed since their first entrance in the dataset, whilst in the case of native workers (both native immigrants and locals) the first available observation does not necessarily refer to the first entrance in the dataset (the variable is left-truncated).[16] The second variable measures the months spent out of the "job" which could represents periods devoted to education, employment in sectors not covered by the dataset, unemployment, irregular employment and for foreigners also return back home for a while. This second variable could thus play either a positive role in the labour market, by capturing the acquisition of human capital in the

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[14] WHIP dataset does not contains information on nationality

[15] For instance many Filipino maids cannot use their English linguistic ability because in the house where they work nobody speaks English.

[16] Since the WHIP dataset starts from 1985, the variable 'months of employment' is left-truncated for workers who entered employment before 1985. For foreign immigrants this is not much of a problem since the vast majority of inflows into the Italian labour market started in 1990.

underground economy or the acquisition of more general social capital out of the labour market, or a negative role by reducing human capital accumulation.

We want to test if this variable plays a different role in the employment performance of the three groups. For locals, the periods of non employment are expected to affect wages negatively, while for native immigrants both option are possible, they could acquire human capital working illegally or in another sector or they could be unemployed and thus have a negative impact on wage. In the case of foreign immigrants the negative impact should be lower since a longer presence in the host country, even if not in employment, could positively affect at least the migrant's social capital which has a positive return in the labour market. If we sum up the two variables we get the presence in the dataset which is the best proxy at disposal of the presence of foreign migrant in the country. This last variable frequently used in the empirical studies is not at disposal, but given that we know that the majority of the migrants entered with a legalization programme, adding 2 or 3 year to the total presence in the dataset we can infer the last.

Table 1 shows the variables of interest for the assimilation analysis.

Table 1 – Descriptive statistics in 2003 for foreign immigrants, native immigrants and locals

Variable	Foreign immigrants		Native immigrants		Locals	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Weekly wage	303.35	(107.4)	458.02	(230.0)	432.69	(215.7)
Age	33.13	(8.7)	40	(10.8)	37	(10.4)
months of employment	40.19	(45.5)	130.21	(73.9)	130.22	(72.6)
months out of employment	7.85	(18.8)	24.94	(38.1)	20.96	(34.4)
blue collar	0.93	(0.2)	0.67	(0.5)	0.64	(0.5)
white collar	0.03	(0.2)	0.30	(0.5)	0.30	(0.5)
Apprentices	0.04	(0.2)	0.03	(0.2)	0.05	(0.2)
Managers	0.0002	(0.0)	0.006	(0.1)	0.004	(0.1)
Atypical	0.13	(0.3)	0.11	(0.3)	0.11	(0.3)
part-time	0.13	(0.3)	0.03	(0.2)	0.04	(0.2)
firm size 0_20	0.25	(0.4)	0.07	(0.3)	0.11	(0.3)
firm size 20_200	0.47	(0.5)	0.32	(0.5)	0.36	(0.5)
firm size 200_1000	0.17	(0.4)	0.22	(0.4)	0.21	(0.4)
firm size _over1000	0.11	(0.3)	0.38	(0.5)	0.32	(0.5)
North West	0.39	(0.5)	0.51	(0.5)	0.30	(0.5)
North East	0.33	(0.5)	0.24	(0.4)	0.22	(0.4)
Centre	0.21	(0.4)	0.20	(0.4)	0.18	(0.4)
South	0.07	(0.2)	0.05	(0.2)	0.29	(0.5)
Manufacturing	0.41	(0.5)	0.46	(0.5)	0.48	(0.5)
Construction	0.26	(0.4)	0.16	(0.4)	0.13	(0.3)
Services	0.33	(0.5)	0.38	(0.5)	0.38	(0.5)
Mediterranean Africa	0.22	(0.4)				
Africa other	0.17	(0.3)				
Latin America	0.03	(0.2)				
Asia	0.20	(0.4)				
East Europe	0.37	(0.5)				
N. observations	8001		10072		53154	

The comparison of the different groups already reveals their different migratory history: foreign migrants are **younger** than local workers who are even younger than native immigrants. In fact migration from the South to the North took place mainly after the Second World War and continued at lower pace, while foreign migration is much recent thus the foreign workers are younger. The recent inflows of locals in the labour market are larger than the more recent inflows of native immigrants thus the average age is higher for this last group.

In addition if we look at the firm dimension we can see that native immigrants are relatively more present in the large and very large firms which dominated the Italian development in the '60s, while foreign migrants are concentrated in small firms which instead dominate the economic development of the '80s and '90s. And 25% of foreign migrants are concentrated in **very small firms** (1-20) against 7% and 11% for the native immigrants and for the locals.

Also the area of employment point out at the previous story, while native locals are employed all over the country, native immigrants are employed mainly in the North West which has been in the '60s the booming Fordist industrial area which attracted labour from all over the country. Foreigners are instead more attracted by the **North East** the area which on the contrary was booming in the '80s.

In our dataset that covers only employees in private firms, the employment as blue collar dominate in all the groups, but for foreigner **blue collar** work represent 93% of total employment. This result is easy to explain considering the difficulties in the knowledge of the Italian language among the foreigners, where the ability to communicate is very diffuse, but the ability in reading and writing is very limited. Blue collar employment is also important among the native immigrants because they moved to the North when the demand was concentrated in large mechanic company. Finally foreign immigrants are highly concentrated in the construction sector.

For all the reasons mentioned it is not surprising that the average wage of foreign immigrants, who are mainly blue collars, young and employed in small firms' worker is lower than the one of the other groups.

Foreigners from Africa dominate the other ethnic groups, followed by workers from Eastern European countries, which is the group that has grown most rapidly in recent years.

Figure 3 Average nominal weekly wage by groups
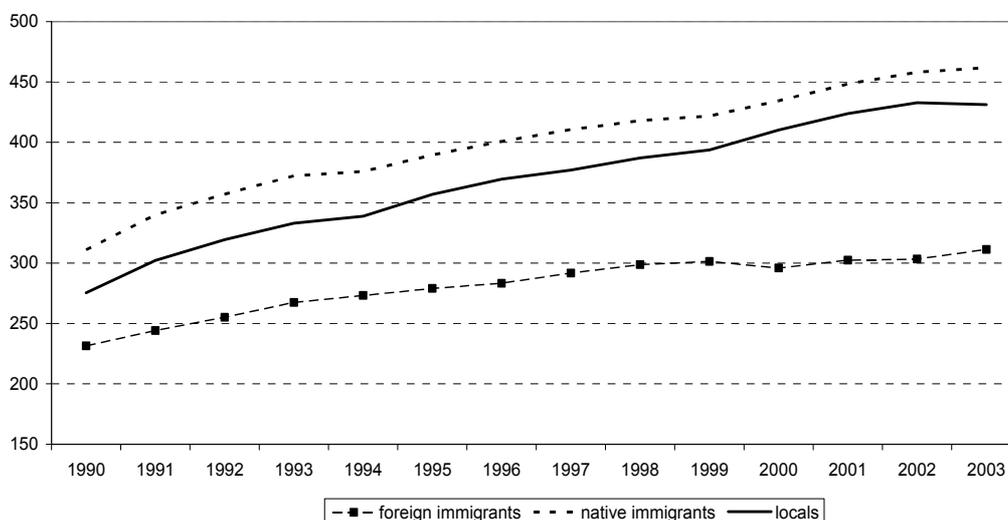
Starting from 1990, when most foreign flows took place, average wage of foreign workers is always lower than that of native immigrants and locals, and the differential is increasing over time. Average wage of native immigrants and locals seems to roughly follow the same pattern.

Figure 3 Nominal Wage differential by groups – Male 18-45
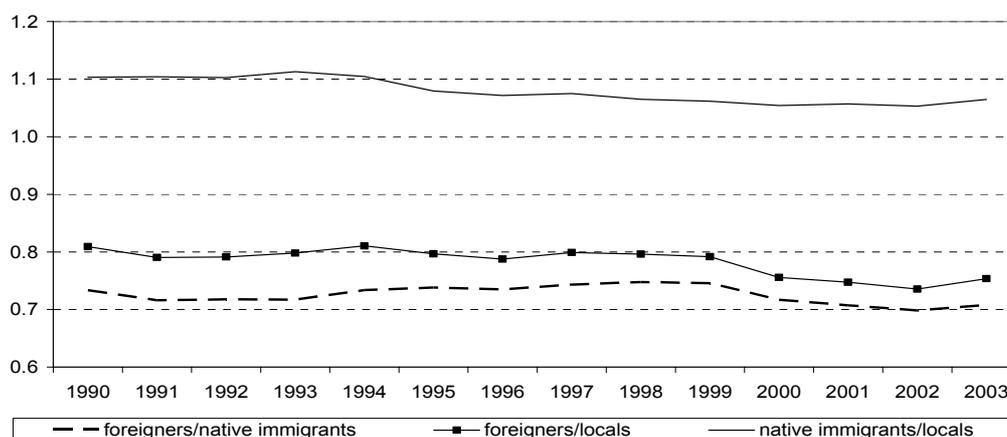
Focusing on prime age male, which is the group on which the assimilation analysis is performed, we find that the wage differential between native immigrants and local natives is slightly declining along all the period. The wage differential between foreigners and either the locals or the native immigrants is more irregular and it is declining since 1999. In 2003 foreign wages are on average about 75% of the wages of locals and about 70% of the wage of native immigrants.

Table 3 shows the differences among the different groups in what individual and job characteristics are concerned: the share of blue collars workers is lower among the Latin Americans, who show also the lower share of workers in the north eastern part of Italy. Asians hold the lower wage among the foreign workers, while the Africans have higher wages. The table also highlights the difference in the timing of entrance into the Italian labour market, being the eastern European workers the most recent comers. This difference in the ethnic inflows is reflected also in the different average values in the total job experience.

Table 3 Foreign workers characteristics by ethnic groups

2003	%	Weekly Wage	Average months of employment	Average months out of employment	blue collar (%)	firm size 0_20 (%)	North East (%)
African Med	17.4%	296.63	42.46	10.16	0.93	0.25	0.31
African Other	21.5%	313.67	56.58	11.3	0.96	0.10	0.37
Latin American	3.5%	302.22	26.64	6.4	0.89	0.35	0.13
Asian	21.0%	292.82	29.61	5.04	0.93	0.25	0.33
East Europe	36.6%	298.53	26.51	4.25	0.95	0.33	0.33

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4 Wage assimilation: model and estimation strategy

4.1 The model
The descriptive analysis already reveals large differences among the 3 groups of workers and also among the foreigners and a descriptive approach is not sufficient to cover all the specificity.

Our empirical analysis extends the classical model of wage assimilation (Chiswick 1978) by explicitly including measures of social and human capital as described above. In addition we want to understand the role played by the community of the migrant in the destination area. More and more attention is devoted to the role of the ethnic community in the destination area and policy intervention have been designed to favour integration by spreading migrants far from the aggregate communities, with however uncertain results. Here we proxy the migrants'community for the native immigrants and for the foreign immigrants with the share of workers born in the same area of the migrants and now working in the same regional destination on total area regional employment. In this way we built a variable which measure the size of the worker community both native immigrants and foreign ones.
The model thus is given by:

$$\ln w_{it} = \alpha_i + x_{it}\beta + h_i\gamma + z_{it}\delta + s_{crt}\xi + u_{rt}\vartheta + v_{rst}\eta + \tau_t + \varphi_r + \phi_s + \varepsilon_{it} \quad \textbf{(I)}$$

and is estimated separately on the three groups of workers, locals (i=nl), native immigrant (i=ni) and foreign immigrants (i=fi).
ln w is the log weekly wage of individual i in year t; α_i are individual fixed effects that take into account unobserved heterogeneity; x_{it} is a vector of individual time variant social and human capital variables; h_i are time invariant individual characteristics; z_{it} includes controls for job characteristics, s_{crt} is a variable which measures the dimension of the community of the immigrant at regional level and u_{rt} and v_{rst} are macro variables that take into account the regional macroeconomic framework: in particular u controls for the characteristics of the regional labour market[17] while v controls for the aggregate demand at region and sector level[18]. Finally τ_t are time fixed effects, φ_r are region fixed effects and ϕ_s are sector fixed effects.

For the three groups [i= fi, ni, nl] we have:

βn $X_{st=}$ $_{\beta n1}$ Age + $_{\beta n2}$Age^2 + $_{\beta n3}$ Total experience + $_{\beta n4}$ Total experience^2.

We test $\beta_{n=fi}$ with respect to $\beta_{n=ni,l}$ and if βfi< βni *or* βfi< βnl we have a under-assimilation of the foreigners, while if βfi> βni *or* βfi>nl over assimilation.

Moreover we have to take into account the effect of periods spent out of employment that could either increase, or decrease human capital according to different groups of workers.

The Italian labour market is quite regulated (national contracts are extended to all workers: trade unions and no trade unions members) thus we do not expect large difference in the coefficients, however, given that the information available on

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[17] Unemployment rate at regional level.
[18] Value added by region and sector.

occupation is quite general, we have only four broad skill categories (apprentices, blue collars, white collars, and managers), variability inside each occupation can be high. In addition the 1993 Income Policy Agreement introduced a more decentralized bargaining system which allows firms to better adjust their wage structure according to firms' performance and local conditions and raised the average share of top-up components over total wage to about 22% (Devicenti et al. 2006).

4.2. Estimation strategy

The estimation of the wage equation may be affected by a bias from selection into employment, as wages are only observed for working individuals, and we know that the selection into employment is not random with respect to individual characteristics. We apply the efficient fixed-effect transformation to control for fixed, unobservable, characteristics that may be associated both with selection into the sample and with outcomes[19].
Our sample is an unbalanced panel for the period 1990-2003. Individuals are recorded with their job histories throughout the observation period.

1. In order to compare foreign migrants with a group more similar to them we perform our analysis on **men in the working age 18-45**. Thus we exclude women because, as already mentioned, our dataset does not include employment in the public sector where a large share of native female workers is employed and family services where the vast majority of female immigrants are employed. Since female immigrants sample size in WHIP is too small, analysis on this group could give misleading results[20].
In addition we would like to recall that family migration describes female migrants as followers in the migratory process and secondary workers, thus we expect in this case larger differences among the three groups. This is not only limited to foreign immigrants but it is strongly related to the native immigrants that went to the North attracted by the mechanic industry booming, and the family followed later on.
Moreover we choose only workers in the central age in order to avoid the too old native immigrants.

2. As our main focus is on the impact of social and human capital on wage assimilation, and these are time varying variables, we do not incur into the annoying problem of not having an appropriate estimate of the variable of interest. However, by using the fixed effect estimates all the non time variant variables go in the fixed effect and we loose a lot of information.

In order to better highlight different behaviour among foreigners from different countries of origin, we interact all social and human capital variables with specific dummies for the main ethnic groups.
We tried also a random effect model which gave different results, but the Hausman test of fixed versus random effects concludes that the fixed effects results should be preferred.

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[19] The dataset at our disposal do not allow us to control for the participation and the participation correction is no possible.
[20] For instance average wage for foreign women is always higher than local female average wage up to 1996.

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

3. To control for the demand side and in particular the different trends in the sectors of economic activity, we include in our specification also two macroeconomic variables: the change in the value added by branch and region and the unemployment rate by region. This is done because we want to control the different trends of the sectors where the workers are employed which affect their wage.

4. Moreover to highlight the effect of the economic conditions prevailing at the entrance into the labour market, which can condition future wage path and future assimilation, we also perform the analysis only on the three groups of workers who enter the employment market in the same period. Thus to have an adequate number of foreigners we chose as entrance year the 1990 and 1991.

5 Results

5.1 Aggregate results

As the table 4 shows there are not, as expected, striking differences among the three groups of workers because the Italian labour market is quite regulated and the contracts extended to both unionised and non-unionised workers.

Table 4 Fixed effect estimates of log weekly wage in nominal terms 18-45 male (robust s.e.)

	Foreign immigrants		Native immigrants		Locals	
Log weekly wage	Coef.	t	Coef.	t	Coef.	t
_cons	**3.573**	12.53	**3.700**	17.1	**3.490**	46.7
Age	**0.048**	5.73	**0.053**	6.6	**0.064**	20.7
Age ^2	**-0.0002**	-3.94	**-0.0002**	-5.1	**-0.0003**	-17.3
months of employment	**0.0018**	2.9	**0.0031**	4.8	**0.0020**	8.1
months of employment ^2	**-0.000002**	-3.3	**-0.00001**	-20.7	**-0.00001**	-45.2
months out of employm.	0.0004	0.72	-0.00045	-0.7	**-0.001**	-2.3
Log VA	**0.074**	3.93	**0.055**	4.8	**0.061**	15.5
Reg. unemployment rate	0.003	0.98	**-0.003**	-2.3	**-0.006**	-20.1
Share of reg. foreign employm.	-0.955	-0.65	**-1.668**	-2.9		
Share of reg. foreign employm. ^2	0.251	0.49	0.103	1.7		
apprentices	**-0.368**	-13.77	**-0.298**	-21.7	**-0.281**	-66.6
Blue collar	**-0.097**	-4.36	**-0.104**	-13.7	**-0.087**	-36.1
Atypicals	**0.027**	5.54	**-0.012**	-2.7	**-0.020**	-13.4
firm size 20_200	**0.020**	5.19	**0.023**	6.4	**0.025**	19.5
firm size 200_1000	**0.041**	6.2	**0.042**	8.5	**0.052**	27.7
firm size _over1000	**0.083**	7.98	**0.080**	13.99	**0.078**	35.3
N obs	33622		60678		359527	
F	150.07		591.88		6031.63	
corr(u_i, Xb) =	-0.5711		-0.3118		-0.4073	
Prob > F =	0.0000		0.0000		0.0000	
R-sq: within =	0.3795		0.5296		0.6079	
between =	0.0562		0.1855		0.237	

overall =	0.1259	0.2599	0.3341

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

Periods spent out of employment has a negative effect on the local workers while is not significant for native immigrants and for the foreign ones. The immigrants are a more mobile section of the labour force, thus foreigners could increase their social capital while are out of the job and in such way not decreasing their productivity. Native immigrants as well are not negative affected by the time off the job. This result highlights, as in the cases mentioned before, the importance of the experience on the job for the assimilation of immigrants but also the weaker damage of the time off the job for the immigrants.

The *macro variables* contribute in explaining the wage dynamics of the three groups of workers in a different way. While for all groups the increase in the value added in the sector and region push up their wage, the regional unemployment rate slows down the native locals or immigrants wage growth and is insignificant in the foreigner wage dynamics. This results is quite expected because the unemployed rate is made up in large majority by native unemployed with skilled different from the one they have. Native workers shows a, let us name, Phillips curve wage model.

Last but not least the community variable is not significant in the case of foreign immigrants while is significant in the case of the native immigrants but it hold a negative sign. This is not an usual result for instance Hatton and Leigh (2007) has in the UK a negative sign for the community variable. If we recall that the variable adopted is not a proxy of the size of the immigrants community, but it represents the size of the community of workers coming from the same area, the negative sign is less puzzling. The results point out a supply effect which reduce the wage growth among the native immigrants. Probably the size of foreign migrant community is too small to play a similar role.

We do not discuss the type of contract, firm size, regional, sector and year dummies which are included in the regression because the fixed effect estimates test them only if there are workers who transit from one category to the other. If the groups are different the comparison of the coefficients of the dummies is not reviling. However, even if the two groups are similar, the variables types of contract and firms dimension do not present very different results among natives and immigrants.

Let us go back to the human capital variable and to the wage assimilation pattern of immigrants.
Looking at the cumulated effect of human capital variables (Age, Experience), foreign male immigrants never assimilate to the native immigrants and the locals, because both the coefficients on age and experience are smaller that the respective ones. However, if the months out of employment are included the human capital of the locals decreases while the immigrants' human capital remain the same.

The following graphs give a visual representation of the effect of human capital variables on assimilation. In Figure 4, the pure effect of age on the wage profiles of the three groups is shown, i.e. the log wage values as age increases keeping constant all the other controls and with the other human and social capital variables set at zero value. Age contributes at an increasing differences among the three groups. At the beginning native immigrants and locals are not very different, but the distance widens as age increases. The same happens for foreigners who have the flatter age-wage profile.

If we add to these profiles the effect of labour market experience, which, as discussed above is more rewarding for natives, we have the profiles illustrated in figures 5. These graphs show the cumulated effect of human capital variables on wages for a male blue collar worker who starts working at the age of 25 with increasing experience in the labour market.

Figure 4 Age-log wage profiles for foreigners, native immigrants and locals
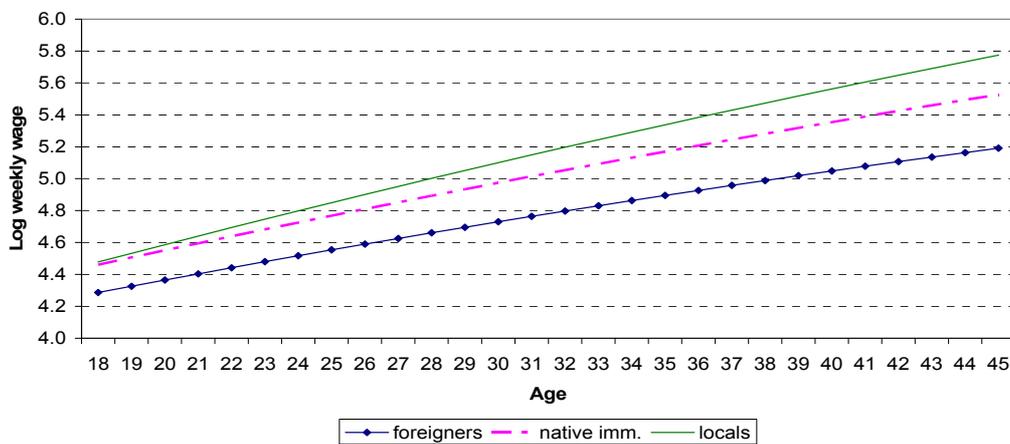
Figure 5 Experience- log wage profiles for foreigners, native immigrants and locals (25 years old blue-collar worker in a small northern manufacturing firm)
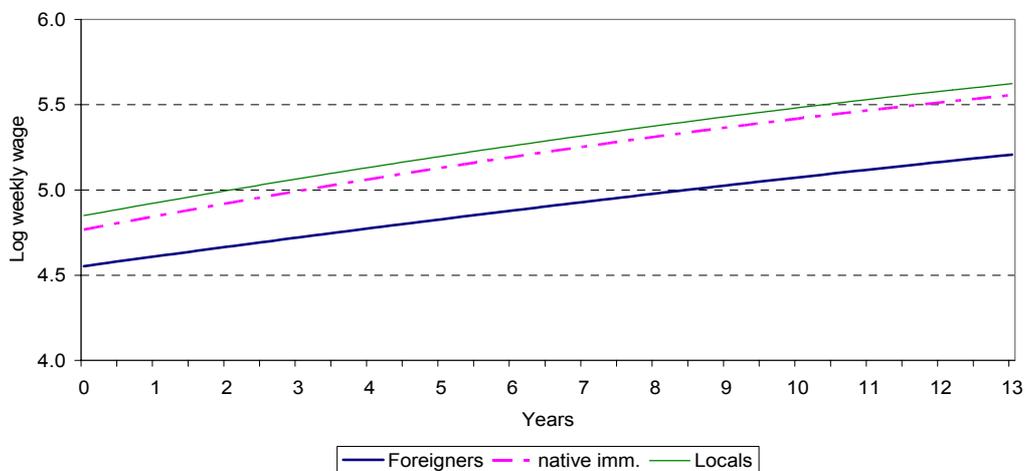
For the native immigrants, the positive effect of experience mitigates the effect of age and the profiles for native immigrants and locals are very similar for all the period considered. Nevertheless, native immigrants never assimilate to native locals, even if they know the language and the culture of the country, they always remain a little behind. This is the first research that tackles the assimilation of native immigrants and, while this results was discussed in the sociological literature, it has not be proven with a large dataset.

For foreign immigrants, given the lower return on age and experience than natives, the distance between the two profiles increases all over the period. Thus, foreign workers never assimilate to natives.

The increasing differences between the locals and foreigners wage profile support the interpretation of an under assimilation of the foreigners, who does not close the wage distance with the native immigrants, even if likely they improve the language knowledge and increase the social capital in the destination area. Language and social capital, however, matter a lot because the native wage profile is much closer to the locals one.

5.2 Sensitivity analysis

To control how sensitive are the results obtained to the proposed specification, the same regression with out all the controls has been run. The coefficients of the variables of interest presented in table 4 remain almost the same.

Note also that in table 4 the intercept gives the average log weekly wage for workers with age equal to zero, and, given that foreigners are on average younger than natives, it is not surprising that the intercept is higher. A regression, which includes only social and human capital variables without the age variables, gives an intercept of 5.56 for foreigners; 6.01 for native immigrants and 5.96 for locals.

Differences by geographical areas

In the introduction of the paper both Figure 2 and Table 1 show that immigration flows and stock are not equally distributed: the North West experienced large inflows of native migrants from the South of Italy (between 8-60000) since the second world war but the inflows declined and reached a much smaller amount (about 2-3000) in the '90, while the North East was a much less important destination from immigration from the South in the '70s the inflows never overcame 20000 and increased recently. This why in our dataset which consider only workers in private firms 51% of native immigrants are in the North West and only 24% in the North East. Recent immigration of foreigners is instead much less concentrated in the North West only 39% against 33% in the North East. On the other hand the South has been the area from which Italian emigration mainly left and the area with the lowest presence of foreign dependent workers.

The separate test of the model by areas provides in the North West and in the North East similar results increasing differentials between foreigners and natives. No differences between locals and native immigrants. In Centre and South foreigners and native immigrants are alike at entrance in the labour market, but the acquisition of more human capital is more effective for native immigrants which reach the locals while the profile for foreigners is flatter.

Assimilation of different ethnic groups

In order to see if there are differences in the assimilation pattern among different groups of workers, we have interacted the variable of interest by large area of origin. We have divided African migrants into two groups: *Mediterranean Africa* where the main nationality is Moroccan, and *Other Africa* which includes Ethiopia and Eritrea and Ghana, Nigeria etc. All the migrants from *Latin American* countries are included in a single group, which, however, is not representative of the large Latin American community present in Italy because is concentrated in family services, which are not present in the dataset available. Last is *the Asian group*, which comprises Filipinos, Indians, Bangladeshi and Chinos.

The results are not very satisfactory. With exception of the African group which performs as the average foreign migrant, the other groups are too small to provide a separate similar results. In the Eastern European case the experience on the job is not significant, in the Latin American and Asian group the age variable is not significant probably because the observation are too limited.

5.3 Entrants in employment in 1990 and 1991

Some of the results presented in the section above could be affect by the of different economic cycles prevailing at the time of entrance into employment which conditioned the future wage path and the future wage assimilation process. This is a usual problem in the empirical analyses but it become even more important in the case at hand because while native locals enter the labour market through all the period, foreigners arrived in the late '80s and the large majority of native immigrants in the 70's. Of course age and experience capture the human capital embodied by the worker and the macro variables capture different regional and sectorial economic cycle, but better understand the differences in the assimilation pattern among the three groups we select a subsample which include only workers that entered the labour market in the same period. We thus perform the estimates only with to workers who enter the labour market in the same two years 1990 and 1991.

Figure 6 Log wage profiles with increasing experience in the labour market. Entrants in 1990 and 1991

Group	foreigners		native immigrants		locals	
	MEAN	(STD)	MEAN	(STD)	MEAN	(STD)
Average N obs	11418		9006		58211	
Weekly_wage in euro at entrance	202.97	(60.9)	269.62	(123.3)	222.79	(108.4)
Average Weekly_wage in euro in the 1990-2003 period	275.24	(94.1)	362.98	(195.3)	329.63	(173.6)
Age at entrance	28.82	(6.1)	33.08	(12.6)	27.92	(12.0)
Average number of months of employment in the 1990-2003 period	61.81	(42.5)	60.34	(41.3)	63.31	(42.9)
Average number of months out of employment in the 1990-2003 period	14.31	(22.4)	20.11	(29.2)	14.73	(24.9)

Table 6 reveals a larger inflow in employment of foreign immigrants than native ones, who, nevertheless, are older and earn an average higher wage.

Results for these groups are very similar to those for the entire sample, confirming that our specification is able to control for the characteristics of the labour market that can affect wage growth. Table 7 presents the results. The age and experience variables are higher for native locals and immigrants than for foreign immigrants who never catch up. The macro variables has the same effect, the value

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added positive for all and the unemployment effective only for the locals. The community variable is not significant in neither case.

If we compare the results of the assimilation in the subsample of the entrants in '90-1 with the entire sample results, this last shows a higher assimilation for all the foreign migrants both for the age and experience coefficient, while a lower wage profile for both age and experience for the locals. Thus in the subsample of the worker entering the labour market in the same years the difference between the two wage profile increase as Figure 6 shows. Native immigrants are an intermediate case because in the entire sample age is lower but experience is higher.

Table 7 Fixed effect estimates of log weekly wage in nominal terms 18-45 male-Entrants in 1990 and 1991

	FOREIGNERS		NATIVE IMMIGR.		LOCALS	
	Coef.	t	Coef.	t	Coef.	t
Intercept	4.41	0.15	2.08	3.49	2.45	11.67
Age	0.035	5.98	0.11	5.23	0.1	12.47
Age²	-0.00011	-1.26	-0.00024	-1.93	-7.50E-05	-1.52
Months of employment	0.0013	**5.54**	0.0024	**3.53**	0.0021	**8.38**
Months of employment 2	-2.37E-06	**-1.71**	-1.1E-05	**-3.97**	-6.42E-06	**-6.11**
Δ value added_srt	0.035	**2.53**	0.074	**2.19**	0.075	**5.57**
Unemployment_rt	-0.0027	-0.92	0.0032	0.86	-0.0112	**-11.33**
Share of employees	0.731	0.29	-3.41	-1.63		
Share²	-1.48	-1.58	0.40	1.65		
Type of contract dummies	yes		yes		yes	
Firm size dummies	yes		yes		yes	
Region dummies	yes		yes		yes	
Year dummies	yes		yes		yes	
Sector dummies	yes		yes		yes	
sigma_u	0.2337		0.6006		0.5493	
sigma_e	0.1637		0.1874		0.1809	
rho (fraction of variance due to u_i)	0.6708		0.9113		0.9022	
N.obs	11418		9006		58211	
R-sq: within =	0.461		0.5673		0.6336	
between =	0.1112		0.0744		0.1029	
overall =	0.2281		0.1728		0.2447	
F (Prob > F) =	237.62	(0.00)	82.50	(0.00)	627.89	(0.00)
corr(u_i, Xb) =	-0.3276		-0.6903		-0.6414	

With the exclusion of the first three years after entrance, locals always overcome immigrants either native or foreigners with a steeper wage curve. Either native immigrants or foreign immigrants under-assimilate.

Figure 6 Log nominal wage with increasing experience in the labour market (age at entrance 25 years)
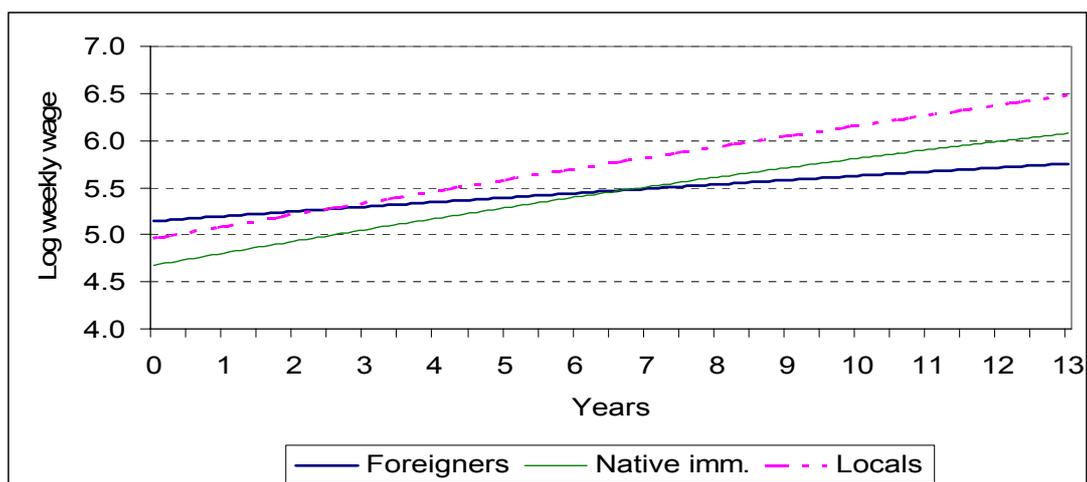
As in the aggregate case native immigrants assimilate more than foreign immigrants even if the locals always stay above the other two.

6. Concluding comments

The analysis in this paper focuses on wage assimilation of male immigrants in the Italian labour market. Italy has a recent history of foreign immigration and a long history of internal immigration from the Southern regions to the North. The objective of the paper is to understand patterns of assimilation of foreign migrants with respect to native immigrants, i.e. internal migrants, and local natives. This is an unique opportunity, like as experiment, where we compare native immigrants well proficient in the language of the destination country but nevertheless immigrants thus less aware of the social capital of the specific area of destination.

Both groups of migrants are compared with native locals who represents the linguistic benchmark and the social capital of reference. The empirical analyses follow the lines of Chiswick (1991) and Dustman (2001,2002), but inevitably introduces to explain the wage differential between locals and native immigrants additional variables as i.e. social capital, quality of education in addition a possible discrimination.

We use the administrative dataset on dependent employment, WHIP, which allows us to distinguish workers into foreigner workers locals and native immigrants, a comparison not yet exploited. Moreover by using this dataset we are able to built variables aimed at capturing the human capital in the job and out of the job. A fixed effect model of weekly wage of male 18-45 years old which controls for unobserved heterogeneity and economic cycle is tested.

The results for three groups of workers are not very different, as it is exactly the provision of collective contracts with a strong centralized bargaining.

Foreign workers have a similar entrance wages than natives, and accumulation of human capital on the job is reducing their wage gap but remains large and increases in time. The time out of the job is not affecting negatively their wage, showing a possible general non negative effect of the months spent out of the job.

The comparison between internal native immigrants and locals shows that the native immigrants are very close to locals but they never completely assimilate. The time out of the job plays a negative role only in determining the locals wage.

The control for the sectorial and regional change in value added is similar for all the groups while only locals are sensitive to regional unemployment rate. This last results is not surprising because the regional unemployment rate is made by local workers, while native and foreign immigrants are more mobile segments of the labour force and are less present among the unemployed of the destination region.

To better check if the role played by the economic cycle on the wage of the three groups of workers is correctly controlled by our specification, we have performed our analysis only on the sub-sample made of the entrants in the labour market in the same years 1990 and 1991 getting the similar results. The results are very similar to the aggregate one. Native immigrants never assimilate to local natives and foreign immigrants never assimilate to the native immigrants as well.

Last but not least the importance of the community effect variable has always a negative sign but only for the native immigrants, which is not surprising given that it has been measured by the size of the community of workers employed belonging to the same area of birth. Thus the variable used is a measures of a competing group or of a segmentation in the labour market.

As a main conclusion language and social capital matter in the assimilation and foreign migrants never reach native immigrants. However native immigrants never completely reach native locals, thus something else remains and it could be discrimination, different quality of the education or as many Italians would say language (as food and football team) is not the same in the different region and cannot be changed with just a change of residency.

Appendix
Table A1 Italian amnesties by main nationalities

I 1987-1988		II 1990		III 1996		IV 1998		%	V 2002		%
Morocco	21.7	Morocco	49.9	Morocco	42.3	Albania	39.4	18.1%	Romania	134.9	20.9%
Philippines	10.7	Tunisia	25.5	Albania	34.9	Romania	23.4	10.7%	Ucraina	101.6	15.7%
Sri Lanka	10.7	Senegal	17	Philippines	29.9	Morocco	22.4	10.3%	Morocco	48.2	7.5%
Tunisia	10	ex-Yugoslavia	11.3	China	14.9	China	19.1	8.8%	Albania	47.8	7.4%
Senegal	8.4	Philippines	8.7	Peru	14.9	Nigeria	11.6	5.3%	Ecuador	34.3	5.3%
Ex-Yugoslavia	7.1	China	68.3	Romania	10	Senegal	10	5.0%	Cina	33.9	5.2%
Other	50.1	Other	97.1	Other	102.1	Other	91.7	42.4%	Other	246.1	38.0%
Total	118.1	Total	217.7	Total	249	Total	218.7	100	Total	646.8	100

Table A2 Table 5 Variables of interest all interacted with origin dummies

	African Other	African Med	Latin American	Asian	Est Europe
Age	0.038	0.070	n.s.	n.s.	0.058
(t)	(3.13)	(6.06)			(5.94)
Age 2	n.s.	-0.0004			-0.0002
(t)		(-3.79)			(-1.7)
Months of employment	0.0019	n.s.	0.0153	0.0196	n.s.
(t)	(2.16)		(3.81)	(1.99)	
Months of employment 2	-0.0000042				
(t)	(-3.58)				
Months out of employment	n.s.	n.s.	0.0136	0.0185	n.s.
(t)			(3.6)	(1.88)	

Appendix
Description of the dataset

The reference population is made up by all the people – Italian and foreign – who have worked in Italy even only for only a part of their working career. A large representative sample (sampling coefficient is about 1: 90) has been extracted from this population.

For each of these people the main episodes of their working careers are observed. The complete list of observations includes: private employee working contracts, atypical contracts, self-employment activities as artisan, trader and some activities as freelancer, retirement spells, as well as non-working spells in which the individual received social benefits, like unemployment subsidies or mobility benefits. The workers for whom activity is not observed in WHIP are those who worked in the public sector or as freelancers (lawyers or notaries) – who have an autonomous security fund[21].

The WHIP section concerning dependent employment is a Linked Employer Employee Database: in addition to the data about individual and job characteristics, thanks to a linkage with the INPS Firm Observatory, data concerning the firm in which the worker is employed is also available. The observed period goes from 1985 to 1999; also data on 2000-2002 are available but without information on the firm in which the worker is employed.

For each employee, calendar year and employer the following main information are available:
- employee and employer identification
- individual characteristics (date of birth, gender and place of birth);
- place of work ("provincia");
- yearly wage received;
- number of "paid" weeks and days;
- occupation (apprentice, manual worker, non-manual worker, manager);

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[21] There is no attrition in this archive, if we exclude updating problems, i.e. delays in the acquisition of information from the firms. It is compulsory to provide records on employees and firms to the social security administration, if the worker and the firm belong to one of the mentioned categories.

- type of labor relationship (full time, part time, limited or unlimited duration);
- code of contractual agreement and position in the contractual ladder.
- Flag signalling whether in the reference year the worker received a maternity or illness or temporary layoff benefit.
- The start and the conclusion date of the employment period.
- the firm's economic activity (code),
- dates of firm's registration and termination (if applicable);
- number of employees to whom some salary or wage was paid by the employer;

The data used represent about 54% of total employment and about 79% of dependent employment.

WAGE DEFINITION

We use weekly wage by standardizing total yearly wages with the number of paid weeks.

The wage variable is the annual wage based on the total amount of the monthly earnings paid to the worker (basic wage, cost-of-living allowance, residual fees, overtime), plus the total amount of the non-monthly wage (back pay, bonuses, supplements holiday pay, sick pay), expressed in Euros. At the fiscal/accounting level it represents the base for calculating social security and insurance contributions paid by the firm, the social burden of the employee and the eventual tax relief applied to employment. Therefore, this represents the annual net compensation received by the employee, after the social security and health benefit contributions of the firm but before the social security and health benefit contributions of the employee.

This variable catches non working periods such as temporary unemployment, maternity leave, etc…

We standardize total yearly wages using the number of paid weeks, obtaining the weekly wage. An alternative would be to use the daily wage calculated as annual wage divided by the number of paid working days. The reason why the former is adopted is that paid working days could be underreported by the firms to adjust the total wage bill to the minimum wage requirements. Further, such underreporting does not seem to be distributed uniformly in the country, but it appears to be very frequent in the South and among the blue collars (Contini et al., 2000). This would upward bias southern daily wages.

However, average weekly wages may include some variability in the number of days and hours worked as it is sufficient to have worked a single day to have a working week recorded.; to control for this, dummies for periods of sick leave, maternity leave and temporary layoff (*Cassa Integrazione Guadagni)* during the year can been included (the same strategy is followed also by Devicenti et al. 2006).

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