

Wage assimilation of immigrants and internal migrants: the role of linguistic distance

Steinar Strøm

University of Oslo and University of Torino, Lungo Dora Siena 100, 10153 Torino, Italy

Tel: +39 0116704038; Email: steinar.strom@unito.it

Daniela Piazzalunga

FBK-IRVAPP, IZA, and CHILD, via S. Croce, 77, 38122 Trento, Italy

Tel: +39 0461 312288; E-mail: piazzalunga@irvapp.it

ORCID iD: 0000-0002-4765-4971

Alessandra Venturini

University of Torino, MPC, IZA, Lungo Dora Siena 100, 10153 Torino, Italy

Tel: +39 0116704142; Email: alessandra.venturini@unito.it

[ORCID iD](#) : 0000-0001-8858-2743

Claudia Villosio

Collegio Carlo Alberto and LABOR, Via Real Collegio 30, 10024 Moncalieri (To), Italy

Tel: +39 0116705063; Email: claudia.villosio@carloalberto.org

ORCID iD: 0000-0002-1709-4395

Wage assimilation of immigrants and internal migrants: the role of linguistic distance

Abstract

The paper investigates the wage assimilation of foreign immigrants and internal migrants in Italy, comparing them with stayers. Control for selection in out-migration is performed using a new duration version of the Heckman correction and taking into account both return migration and moves to other destinations.

Internal migrants experience only minor wage differences when compared with stayers. By contrast, foreign immigrants earn about 8% less than stayers and internal migrants at the beginning of their careers, and the wage gap increases over time. Both language distance and job segmentation contribute to immigrants' lack of wage assimilation.

Keywords: immigrants; internal migrants; assimilation; wage differential; return migration; linguistic distance

JEL codes: J31, J61, C23

1. Introduction

Understanding the mechanisms underlying immigrant assimilation – defined as disappearing differences between groups over time (Alba & Nee, 1997) – is of the utmost importance for destination countries, in avoiding potential welfare costs and intra-group tensions. Wage assimilation is only one of the steps in the integration process, but it has strategic relevance, and policies to improve it are considered fundamental. This paper analyses the wage assimilation of immigrants in Italy and contributes to the debate in several ways, by (i) comparing foreign immigrants, internal migrants and native stayers; (ii) modelling a new duration version of the Heckman correction and taking into account both return migration and moves to other destinations; (iii) investigating the role of linguistic distance; and (iv) exploring the role of job segmentation.

Italy is a country of recent immigration¹ from different countries of origin and with a long experience of internal mobility. This peculiarity makes the country an interesting case study for examining the wage assimilation of foreign immigrants relative to stayers and investigating the role of the linguistic distance of immigrants' native languages to Italian. In addition, it is possible to explore the assimilation process for internal migrants, who, unlike foreign immigrants, know the language spoken at their destination (and have zero linguistic distance) and share most of the social rules of the destination region.

Based on an Italian administrative dataset on dependent employment (the Work Histories Italian Panel, WHIP), the analysis shows that internal migrants experience only minor wage differences from stayers. By contrast, foreign immigrants earn about 8% less than stayers and internal migrants at the beginning of their career. Over a lifetime, the wage profile of immigrants diverges from the wage profiles of natives, both

internal migrants and stayers. Controlling for positive selection in out-migration (foreign workers with lower skills are the most likely to remain in Italy) yields the same results. In addition, linguistic distance worsens the wage assimilation of immigrants, but it is far from explaining the entire gap. Lastly, the under-assimilation of foreign immigrants largely depends on labour market segmentation: immigrants do not assimilate because they are mainly employed in sectors with no career progression. However, language proximity favours exits from jobs of this kind.

The rest of the paper is organised as follows. First, a brief history of migration in Italy (section 2) and a review of the assimilation literature (section 3) are presented. A description of the data (section 4) and the empirical strategy (section 5) follow. The main results are presented in section 6, and section 7 explores the role of job segmentation. Section 8 concludes the paper.

2. Historical background

Italy has a long tradition of internal migration from less-developed areas to the richest parts of the country (Appendix Figure A1a). Large flows took place in the 1960s from the South and the North-East towards the North-West; they declined at the end of the 1970s, and then acquired new strength in the second half of the 1990s, especially from the South towards the North-East (Appendix Figure A2).

Differentials in per capita GDP and in unemployment rates were the main driving factors in South-to-North mobility (Fachin, 2007; Piras, 2012). Meanwhile, high mobility costs, mismatches in the labour market and the North-South housing price differential dampened down mobility (Attanasio & Padoa-Schioppa, 1991; Cannari, Nucci, & Sestito, 2000; Faini, Galli, Gennari, & Rossi, 1997).

More recently, Italy has become increasingly important as a destination country for foreign immigrants (Appendix Figure A1b). At the end of the 1970s, Italy's first

immigrants arrived from North Africa, Latin America and the Philippines. With the fall of the Berlin Wall, inflows also began from Eastern Europe. By 2016, immigrants represented 8.3% of the population; 59% of them are located in the North, 25% in the Centre and only 16% in the South (Istat, 2016). In general, they hold unskilled jobs: men usually work in construction, agriculture and manufacturing, while women mainly work in services, especially household services.

The effect of foreign immigration on South–North internal flows has been analysed by Mocetti and Porello (2010) and Brücker, Fachin, and Venturini (2011), who found that immigrant concentration in the northern regions has partially substituted the traditional South–North mobility of the less-skilled natives. These results are consistent with research showing that, more recently, the propensity to migrate internally increases with education level and academic performance (Fratesi & Percoco, 2013; Marinelli, 2012).

3. Literature review

The economic literature on immigrant wage assimilation began with the pioneering work of Chiswick (1978) and the seminal contributions by Borjas (1985) for the US, later extended to Europe in several national studies (e.g. Dustmann & Van Soest, 2002; Nielsen, Rosholm, Smith, & Husted, 2004; Venturini & Villosio, 2008).

Scholars typically use a standard wage equation with a human capital approach, specified by distinguishing the role of an immigrant's education and experience before and after arrival and proficiency in the language of the destination. Chiswick (1991) first found that knowledge of the native language was crucial for assimilation; this was confirmed by Dustmann and Fabbri (2003) and by Chiswick and Miller (2015).

Other relevant variables in explaining different patterns of economic assimilation include labour market conditions at entrance, which determine workers'

future prospects (Rosholm, Scott, & Husted, 2006), and migrant networks (Borjas, 1992; Cutler & Glaeser, 1997; Hatton and Leigh, 2011), which can exert a positive or a negative effect (Danzer & Yaman, 2013; De Palo, Faini, & Venturini, 2007; Dustmann & Van Soest, 2002).

Finally, assimilation also depends on the characteristics of immigrants who remain in the destination country, who may represent the ‘best and brightest’ of their initial group or the opposite (Borjas, 1985; Borjas & Bratsberg, 1996; Dustmann, 1996; Mayr & Peri, 2009). If those who remain belong to the higher (lower) tail of the wage distribution, the empirical estimates of assimilation will be biased upwards (downwards) and will be inconsistent. Thus, modelling the return migration decision is a fundamental first step to control for the presence of selection bias in the wage assimilation (Dustmann, 1996). The return migration decision has usually been modelled as a function of income differentials (Constant & Massey, 2003; Dustmann, 2003), social ties (De Haas & Fokkema, 2011) or economic prospects in the countries of origin (Mansoor & Quillin, 2007; Venturini & Villosio, 2008).

Research on Italy, using different data sources, has shown that foreign immigrants do not assimilate to natives (Dell’Aringa, Lucifora, & Pagani, 2015; Fullin & Reyneri, 2011; Venturini & Villosio, 2008), but it has failed to explain why assimilation does not take place. According to the sociological literature, internal migrants have experienced poor economic and social assimilation (e.g. Fofi, 1975; Pugliese, 2006), but there is no econometric evidence for this assertion.

This paper contributes to the literature in several ways. First, methodologically, it models a new duration version of the Heckman correction (Heckman, 1979) to control for selective out-migration back to the country of origin or onwards to other destinations. For the Italian case, Venturini and Villosio (2008) also corrected for

remigration, but only to the country of origin and without using the duration version. Meanwhile, Dell’Aringa et al. (2015), relying on cross-sectional data, were unable to correct for out-migration.

Second, the paper investigates the role of the linguistic distance of foreign immigrants’ native languages to Italian in explaining wage assimilation patterns. This is a novelty in studies on Italy.

Third, the paper compares the wage profiles of foreign immigrants, internal migrants and stayers, providing new insights into the assimilation process. Although the first two groups may share some difficulties (in social integration, under-recognition of education level or prejudice, etc.), internal migrants are definitely advantaged in terms of language skills (with zero linguistic distance), communication skills and cultural background, and their migratory experience is likely to be dissimilar to that of foreign immigrants. Thus, immigrants are different from both stayers and internal migrants. Still, considering the three groups is useful: it empirically tests whether the under-assimilation of internal migrants – as described in the sociological literature – has been confirmed in recent years and in terms of wages; it also enables an analysis of the assimilation process of both internal migrants and immigrants.

Finally, the paper also explores the role of job segmentation in foreign immigrant wage assimilation, adding evidence to the existing literature, among which, notably, Dell’Aringa et al. (2015) investigated the role of human capital characteristics in job segmentation. This paper analyses instead the role of job segmentation in wage formation and the importance of linguistic proximity in exiting from low-wage jobs.

4. Data and descriptive statistics

The only longitudinal dataset that allows for the study of wage assimilation is WHIP.² WHIP is a 1% sample of individuals who have worked in Italy from 1985 to 2004,

based on Italian social security (INPS) archives.³ It allows distinctions between foreign immigrants, internal migrants and stayers; it is very rich in workers' and job details and it provides information on employers.

The analysis is restricted to the WHIP section concerning dependent employment in the private sector from 1990 to 2003. The years 1985–89 have been excluded because the number of foreign workers was too small to perform reliable estimates, and 2004 has been removed because information on firms was not provided.

The focus is restricted to male private employees aged 18–45, to compare immigrants with the most homogeneous group of Italian workers. Women have been excluded since they are largely employed in the public sector (natives) and in household services (immigrants), which are not covered by WHIP.⁴ Moreover, studies on family migration describe female migrants to Italy in that period as followers in the migratory process and as secondary workers.⁵

WHIP does not cover public sector employees (17% of total employment), self-employed workers (22%), workers in the agricultural sector (5%) or domestic workers (4.8%). These limitations are not crucial in understanding male foreigners' assimilation, because Italian legislation limits access to public employment to Italian or other EU citizens⁶ and self-employment accounted for only 2% among foreign work in 2004.

A further issue is the lack of information about education. Individual fixed effects, which are included in the analysis, control for unobserved heterogeneity, and thus also for education, as long as it is fixed over time. However, it is not possible to isolate the effect of education on wage assimilation.

In addition, the dataset does not provide information on the year of arrival of immigrants. Yet, given that the focus is on working-age men, migrating for work

purposes, the authors' interest is on the year of entrance into the labour market, proxied with the first legal enrolment in WHIP.⁷

Finally, it is not possible to control for whether immigrants worked in (or move to) the informal economy or if they move to unemployment. Notably, Bijwaard, Schluter, and Wahba (2014) showed that once immigrants exit the labour market, they are also likely to leave the country (see also Venturini, 2004). Moreover, if the informal economy were also covered, wage assimilation may be even lower, because immigrants earn less.

The workers are divided into the following groups: (i) stayers, referring to Italian workers who are employed in the geographical area of their birth; (ii) internal migrants, comprising Italian workers employed in a different area; and (iii) foreign-born immigrants, covering workers born abroad (referred to as 'foreign immigrants' for the sake of brevity). To identify internal migrants four macro areas of origin and destination are used: the North-West, North-East, Centre and South. This strategy eliminates, as far as possible, commuting workers and reflects the Italian experience of internal migrants as long-distance migrants. Also, each area has a different level of attractiveness, given its specific economic structure. Immigrants are selected using place of birth. Since WHIP does not contain information on nationality, workers born in Western Europe (the EU-15), in the main industrialised countries, in Argentina, Brazil and Venezuela have been excluded. This is to avoid counting Italians born abroad or emigrants' descendants among immigrants. Anyway, they represent only 1.25% of the original sample.

The descriptive statistics show that immigrants' average wages in 1990–2003 were 17% lower than those of stayers and 22% lower than those of internal migrants

(Appendix Table A1). Such wage differentials are, in large part, due to the different characteristics of workers in the three groups.⁸

Although small firms dominate the Italian economy, internal migrants are more likely than the other groups to work for large firms, which drove Italian development throughout the 1960s. They are mainly employed in the North-West, an industrial area that attracted workers from all over the country during those years. Conversely, foreign immigrants are more likely to work in very small firms, which dominated economic development during the 1980s and 1990s, and are concentrated in both the North-West and the North-East – areas that were booming when they first arrived. Blue-collar employment dominates in all groups, but for immigrants it represents over 90% of total employment. Additionally, immigrants are over-represented in the construction sector.

5. Empirical strategy

5.1. The model

The authors follow the traditional human capital model adopted by Chiswick (1978), and subsequently refined (e.g. Borjas, 1985; Dustmann, 1996; Dustmann & Van Soest, 2002).

The dependent variable Y_{it} is the log weekly wage of individual i at time t . It is a function of work experience e_{it} , other individual time-variant variables x_{it} , the worker's job characteristics j_{it} , macroeconomic conditions m_{rst} (which affect both the region r and the sector s where the workers are employed), the size of the migrant's community c in the destination region k_{crt} (when appropriate) and individual fixed effects α_i , which capture unobserved time-invariant heterogeneity.

$$Y_{it} = f(e_{it}, x_{it}, j_{it}, m_{rst}, k_{crt}; \alpha_i) + \eta_{it} \quad (1)$$

where $f(\cdot)$ is assumed to be a linear function of the variables mentioned above and η_{it} is normally distributed with zero mean and it is independent from the variables inside $f(\cdot)$.

The wage equation is estimated separately for the three groups of workers. For internal migrants the estimated wage equation is the following one, while for stayers it does not include k_{crt} :

$$Y_{it} = \alpha_i + e_{it}\beta_1 + e_{it}^2\beta_2 + x_{it}\beta_3 + j_{it}\beta_4 + m_{rst}\beta_5 + k_{crt}\beta_6 + \delta_r + \psi_s + \eta_{it} \quad (2)$$

with region (δ_r) and sector fixed effects (ψ_s), and an idiosyncratic error component η_{it} . β_1, \dots, β_6 are the parameters to be estimated with OLS. The parameters of main interest are returns to experience and to age, to see if wages converge over time. However, all the parameters enter into the determination of wage profiles.

For foreign immigrants, wage equation (2) is augmented by a variable capturing linguistic distance and by a correction for out-migration, both detailed below. Despite the introduction of individual fixed effects and correction for selection in out-migration, one should keep in mind that these results may not have a causal interpretation, if there are unobserved characteristics which vary over time and affect migrant assimilation.

To control for language proficiency, which has been shown to be an important element in migrant assimilation, linguistic distance l_c , interacted with work experience e_{it} , is added to equation (2) (further details in section 5.2)

In addition, controls for endogenous selection in return migration are needed to avoid possible biases from the existence of a systematic link between the decision to stay and labour market outcomes. If this is the case, in fact, even fixed effect estimates may give biased parameter estimates. As mentioned in section 3, a number of studies have dealt with this issue, modelling the probability of staying in the host countries as a

function of individual characteristics and exclusion restrictions, and then including the inverse Mills ratio (IMR) in the wage equation (Heckman correction).

The contribution of this paper is to extend the traditional Heckman correction element in the wage equation with a duration version of this correction, to this end denoted DIMR. The length of stay for individual i in the labour market of the destination country is denoted T_{id} , where d is the year when the individual entered the formal labour market. In this sample, the individual is observed at year t . Thus:

$$T_{id} \geq t - d_i \quad (3)$$

where $t - d_i$ corresponds to the sum of spells spent in employment and out of employment. $g(T_{id})$ is a linear function of some observed variables q_{it} that are assumed to have an impact on out-migration, as follows:

$$g(T_{id}) = q_{it}\gamma + \varepsilon_{it} \quad (4)$$

q_{it} includes all the control variables of the wage equation, as well as the GDP growth rates at time t in the origin country and in other potential destination countries. The last two variables represent job opportunities in other countries and are not present in the wage equation, serving as exclusion restrictions. The random term ε_{it} is assumed to be normally distributed with zero mean and variance τ^2 . γ is a vector of coefficients that have to be estimated.

The reason for controlling for selection is that there could be a correlation between the unobserved and random term in the wage equation η_{it} and the random term ε_{it} that has an impact on the length of stay and hence on the selection of individuals observed in the sample at year t . Remember that wages are observed only for those who are still in the country at year t . The next step, therefore, is to calculate the expected value of the error term in the wage equation, η_{it} , conditional on the individual being in the country at year t , $E(\eta_{it}|T_{id} \geq t - d_i)$. This conditional expectation is what should

be included in the wage equation to control for selection. As alluded to above, it is denoted DIMR. If $T_{id} \geq t - d_i$, then individual i has not out-migrated at year t and he is still in the sample.

Let φ denote the p.d.f. of the standard normal distribution and Φ the corresponding c.d.f.

Note that due to the normality assumption $\eta_{it} = \rho\varepsilon_{it} + v_{it}$, 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. Then, for any real number a :

$$E(\eta_{it}1\{\varepsilon_{it} > a\}) = \rho E(\varepsilon_{it}1\{\varepsilon_{it} > a\}) = \tau\rho E\left(\frac{\varepsilon_{it}}{\tau}1\left\{\frac{\varepsilon_{it}}{\tau} > \frac{a}{\tau}\right\}\right) = \tau\rho \int_{\frac{a}{\tau}}^{\infty} \varphi(x)dx = \tau\rho\varphi\left(\frac{a}{\tau}\right) \quad (5)$$

From (5) the DIMR is obtained:

$$E(\eta_{it}|\varepsilon_{it} > a) = \tau\rho \frac{\varphi(a/\tau)}{\Phi(-a/\tau)} \quad (6)$$

Consequently, it follows that:

$$E(\eta_{it}|T_{id} > t - d_i) = E(\eta_{it}|g(T_{id}) > g(t - d_i)) = \tau\rho \frac{\varphi\left(\frac{g(t-d_i)-q_{it}\gamma}{\tau}\right)}{\Phi\left(-\frac{g(t-d_i)-q_{it}\gamma}{\tau}\right)} = \tau\rho \frac{\varphi\left(\frac{g(t-d_i)-q_{it}\gamma}{\tau}\right)}{\left[1-\Phi\left(\frac{g(t-d_i)-q_{it}\gamma}{\tau}\right)\right]} \quad (7)$$

Let DIMR be denoted λ_{it} and it is given by

$$\lambda_{it} = \tau\rho \frac{\varphi\left(\frac{g(t-d_i)-q_{it}\gamma}{\tau}\right)}{\left[1-\Phi\left(\frac{g(t-d_i)-q_{it}\gamma}{\tau}\right)\right]} \quad (8)$$

The wage equation (2) for immigrants is thus augmented by λ_{it} :

$$Y_{it} = \alpha_i + e_{it}\beta_1 + e_{it}^2\beta_2 + x_{it}\beta_3 + j_{it}\beta_4 + m_{rst}\beta_5 + k_{crt}\beta_6 + \\ + l_c * e_{it}\beta_7 + \lambda_{it}\sigma + \delta_r + \psi_s + \omega_{it} \quad (9)$$

As seen from (8), τ and ρ cannot be estimated separately. In (9) $\sigma = \tau\rho$. Note that individual fixed effects are included in the wage equation, but not in selection terms.

When estimating the model, $g(t - d_i)$ is represented by a linear function of months of employment and months out of (formal) employment. The sum of these two

variables equals $(t - d_i)$. In the estimation, they are introduced separately with coefficients to be estimated attached to them. Bijwaard et al. (2014), who focused on return migration, highlighted the relevance of spells in and out of employment on migration duration, suggesting that models ignoring them are likely to be biased.

5.2. Variables

Work experience e_{it} corresponds to months in employment. Individual control variables x_{it} include age and months out of employment. Job characteristics j_{it} are the type of contract (open-ended, atypical), occupation level (apprentice, blue-collar, white-collar), firm size, sector of economic activity and territorial area. The size of the migrant community k_{crt} is captured by the share of the migrant worker community (country of birth for immigrants and region of birth for internal migrants) over total regional employment. The indicators for local macroeconomic conditions m_{rst} are the change in the log value added by sector and region, and regional unemployment rates.⁹

Since Italian proficiency is not available in WHIP, competence in the language of the host country is proxied by the linguistic distance between the native language and Italian. Chiswick and Miller (2005) showed in fact that linguistic distance is one of the determinants of proficiency. For this reason, the wage equation for immigrants includes the Levenshtein distance l_c , a continuous variable computed for each immigrant community (Adserà & Pytliková, 2015). Developed by the Max Planck Institute for Evolutionary Anthropology, this measure of linguistic distance uses the phonetic dissimilarity between most used words, starting from the number of steps needed to transform a word in one language into the same one expressed in the other language.¹⁰ The distance is 0 if the languages are the same and increases the further they are. In this

sample, Spanish is the closest language to Italian (0.583) and Chinese the furthest (1.001).

As previously mentioned, the selection equation q_{it} contains all the variables included in the wage equation, plus the annual GDP growth in the country of origin, and a synthetic GDP growth rate of potential destination countries.¹¹ This second variable is obtained by weighting the annual growth rate of real GDP per capita in the main destination countries (excluding Italy) by the annual share of total migration flows in those countries (see Appendix A3 and Table A3 for details).

6. Results

The results of the selection equation are presented in Table 1. First, the immigrants' probability of leaving increases the longer they stay in Italy: this is captured by the months spent in and out of employment, both periods with a positive and significant effect, proving a negative duration dependence. Second, economic growth in origin countries and, even more so, in other possible destinations, attracts immigrants out of Italy.

[Table 1 about here]

Table 2 summarises the results of the wage equations. For foreign immigrants, the results of the baseline equation are presented (column 1), along with those corrected for out-migration (column 2). As the DIMR coefficient is significant, the preferred specification is the second one. The coefficient indicates a positive correlation between the error terms in the out-migration decision and the wage function: unobservable characteristics that positively influence immigrants' wages also positively influence their decision to leave Italy. Hence, *ceteris paribus* the 'best and brightest' foreign workers are more likely to remigrate from Italy. Without the out-migration correction, the wage profile for immigrants would be underestimated by more than 10%. Similar

findings were detected in other countries (Constant & Massey, 2003, for Germany; Rooth & Saarela, 2007, for Sweden; and De Haas & Fokkema, 2011, for African immigrants in Italy and Spain).

[Table 2 about here]

Most of the individual variables are significant, all with the expected sign. Age has a larger effect on stayers' wages (twice the effect it has for foreign immigrants), while work experience has a larger impact for internal migrants. For immigrants, the positive coefficient of experience is reduced by more than a third by the effect of linguistic distance. The higher the linguistic distance, the smaller the positive effect of experience on immigrants' wages is, in line with research showing the positive effect of language skills on labour market outcomes (Chiswick & Miller, 2015). Periods spent out of employment have a negative and significant effect only on stayers' wages (similar to Edin & Gustavsson, 2008).

Aggregate demand dynamics at the local level help explain the wage growth of the three groups of workers in different ways. Growth in local added value pushes up the wages of all groups, foreign immigrants being the most sensitive; regional unemployment, on the other hand, has a (negative) significant effect only on stayers' wages.

The migrant community has a significant and negative effect among both foreign immigrants and internal migrants, suggesting a negative cluster effect, namely a negative effect of a higher concentration of migrants from the same country/region. Similarly, Boeri, De Philipphis, Patacchini, and Pellizzari (2015) found that migrants residing in more immigrant-dense areas in Italy were less likely to be employed, and Hatton and Leigh (2011) and Danzer and Yaman (2013) found a negative effect on wages in the UK.

To facilitate the comparability of results and summarise wage assimilation patterns, the wage profiles of foreign immigrants, internal migrants and stayers have been built based on the estimates presented in Table 2. They are calculated for a ‘standard individual’, who entered the labour market aged eighteen, employed as a blue-collar worker in a small manufacturing firm in the North-West.¹² For immigrants, the results for those speaking the closest language to Italian (Spanish, $l=0.583$) and the furthest one (Chinese, $l=1.001$) are presented, always using estimations corrected for out-migration.

Figure 1 illustrates the wage assimilation profiles for the first thirteen years spent in Italy. Immigrant workers earn about 8% less than stayers and internal migrants at the beginning of their career. Time spent in Italy does not help in reducing the gap: over time, immigrants’ wages diverge from those of internal migrants and stayers.¹³ After five (ten) years of work experience there is a gap of about 12% (15%) for Spanish-speaking immigrants, and about 16% (22%) for Chinese-speaking ones, with those speaking other languages falling between these two extremes.

[Figure 1 about here]

Thus, language proximity partially reduces the gap in immigrant wages. However, it is far from explaining the total difference, and even for immigrants speaking similar languages the gap widens over time, though they are likely to improve their language skills and increase their social capital. Summing up, immigrants’ wages never align with those of internal migrants or stayers (statistically different profiles),¹⁴ and this remains the case when selective out-migration is taken into account.

During their work careers, internal migrants seem to have a worse wage profile than stayers do. Yet, the profiles of stayers and internal migrants are not statistically different from each other, in part contradicting the main conclusions of sociologists here

(e.g. Fofi, 1975; Pugliese, 2006), who stress the poor economic and social assimilation of internal migrants during the 1960s. This paper suggests, instead, that internal migrants were almost assimilated in terms of wages during the 1990s and early 2000s. These findings are coherent with the results by Mocetti and Porello (2010).¹⁵

The literature has pointed to the importance for assimilation of the phase of the business cycle when immigrants arrive in the host country (e.g. Bratsberg, Baart, and Raaum, 2006) and of cohorts' quality (e.g. Borjas, 1985). The individual fixed effects should already capture cohort effects. In addition, robustness checks have been performed controlling as an alternative for cohort fixed effects, and the results have been confirmed, as is the importance of linguistic distance (Figure 2).¹⁶

[Figure 2 about here]

7. The role of job segmentation

Another explanation for the lack of wage assimilation might be the high degree of segmentation of the Italian labour market. Foreign workers, even highly-educated ones, are concentrated in low-paid and low-quality jobs (Fullin & Reyneri, 2011). Indeed, Dell'Aringa et al. (2015) showed that immigrants' human capital does not help them to access high-paying occupations.

This paper extends the analysis and evaluates the wage profiles of foreign immigrants and natives working in 'low-wage jobs' (LW-jobs hereafter), to disentangle the role of labour market segmentation in the under-assimilation of immigrants.

First, jobs are identified by the three-digit NACE classification of sectors (168 jobs). Then, LW-jobs are defined as those with an average wage for blue-collar workers and apprentices in 1987 below the first quartile (97 out of 168 jobs). In the period under analysis (1990–2003), 70% of the foreign workers in the sample were employed in these jobs, 44% of internal migrants and 39% of stayers (Appendix Table A5). Wages

in LW-jobs are 29% less than the average and the stayer-immigrant raw wage differential is reduced to 5% from the average of 17%. In addition to being poorly paid, these jobs represent a trap: most people who start working in such jobs spend their entire working career there and will never move to a different one – as is the case for 76% of stayers, 84% of internal migrants and 89% of foreign immigrants.

The wage profiles of foreign immigrants, stayers and internal migrants who spend their entire (observed) working career in such jobs are very similar (Figure 3, upper part; Appendix Table A6). After some years of experience, the wage profiles of stayers and internal migrants in LW-jobs are much lower than the profile of natives workers employed in other jobs; it is also lower with respect to native workers who start their career in LW-jobs, but who are able to change later on.¹⁷

[Figure 3 about here]

Moreover, the effect of linguistic distance among people in LW-jobs is not significant (Appendix Table A6), showing that linguistic proximity (and probably linguistic proficiency) does not help in reducing the wage gap if the immigrant works in a LW-job.

Instead, linguistic distance from Italian significantly worsens the immigrants' probability of exiting from LW-jobs (Appendix Table A7). Also, the size of the immigrant community has a negative effect on the probability of exiting LW-jobs, confirming the negative cluster effect. Both months of employment and out of employment have a positive impact on leaving LW-jobs, indicating that what matters is total time spent in Italy.

Both linguistic distance and job segmentation contribute to the lack of wage assimilation and have a similar role in explaining it: after ten years of work experience, the wage differences among groups of immigrants range between 5.4% (immigrants

never vs. always in LW-jobs) and 7.4% (immigrants with minimum vs. maximum linguistic distance) (Appendix Table A8). Still, even in the best-case scenario (minimum linguistic distance, never in LW-jobs), immigrants experience a wage gap in relation to stayers, suggesting that unobserved factors or discrimination also play a role (Figure 3, bottom part).

8. Conclusions

Taking advantage of the presence of both foreign immigration and internal migration in Italy, this paper investigates the wage assimilation patterns of male immigrants and internal migrants in relation to stayers, using administrative data on dependent employment.

The econometric specification first corrects for selection in out-migration with a Heckman correction, which takes into account job opportunities at home and in other countries and which is newly refined with the duration of stay in the destination country. Then, wage equations are estimated separately for the three groups, controlling for individual fixed effects. For foreign immigrants, the role of linguistic proximity is also explored.

The modelling of the out-migration decision highlights the temporary character of the immigration project in Italy and the positive selection of out-migrants.

Findings from the wage equations show that internal migrants experience only minor and not significant differences from stayers. By contrast, in the long run foreign immigrants do not assimilate into either native group, with the gap increasing over time; this remains the case when controlling for out-migration. The wage gap for immigrants speaking languages closer to Italian increases at a slower pace than for the others, highlighting the role of linguistic skills in wage assimilation. However, for all immigrant groups the gap increases over time.

The lack of assimilation is partially due to labour market segmentation and to the concentration of foreign immigrants in low-skilled and low-wage jobs (70% vs. 39-44% of native workers). Workers who spend their careers in these jobs have almost the same wage profile, no matter whether they are foreign immigrants, internal migrants or stayers. Moreover, they all have a low probability of progressing from such jobs, which is even lower for immigrants, who are also more likely to be employed in them. Linguistic proximity does not reduce the wage gap for immigrants in low-wage jobs, but it helps immigrants to leave these jobs. Labour market segmentation could also explain the positive selection in out-migration: the scarce job mobility for immigrants may encourage the more skilled to go elsewhere in search of better opportunities. Future research should investigate this aspect.

Keeping in mind that these results do not have a causal interpretation, they could give important policy indications. Given the rapid ageing of the Italian population, foreign immigrants are becoming a permanently needed component of the Italian economy. Italy should hence invest in integration policies designed to improve immigrants' linguistic skills and to prevent the segmentation of foreign workers in sectors where there is little chance of promotion. Better job placement services would help foreign immigrants find different jobs from those prevailing in the community of origin. In addition, a bilateral programme of pre-departure and post-arrival training coordinated with the countries of origin might help migrants to get a better return on their human capital.

Acknowledgments

We would like to thank David Card, Martin Ruhs, Herbert Brücker, Dan-Olof Rooth, Tommaso Frattini, Letizia Mencarini, Emilio Reyneri, John Dagsvik, Tito Boeri, Daniele Vignoli and participants in the ESPE, EALE, IMISCOE and TOM conferences, the EUI Migration Working Group, the CEPII and OCDE conference and two anonymous referees for helpful comments.

References

- Adserà, A., & Pytliková, M. (2015). The role of language in shaping international migration. *Economic Journal*, 125, F49-F81.
- Alba, R. D., & Nee, V. (1997). Rethinking assimilation theory for a new era of immigration. *International Migration Review*, 31, 826-874.
- Attanasio, O., & Padoa-Schioppa, F. (1991). Regional inequalities, migration and mismatch in Italy, 1960-86. In F. Padoa-Schioppa (Ed.), *Mismatch and labour mobility* (pp. 237-320). Cambridge, UK: Cambridge University Press.
- Bakker, D., Müller, A., Velupillai, V., Wichmann, S., Brown, C. H., Brown, P., ... Holman, E. W. (2009). Adding typology to lexicostatistics: A combined approach to language classification. *Linguistic Typology*, 13, 169–81.
- Bijwaard, G., Schluter, C., & Wahba, J. (2014). The impact of labour market dynamic on the return migration of immigrants. *Review of Economics & Statistics*, 96, 483-494.
- Boeri, T., De Philippis, M., Patacchini, E., & Pellizzari, M. (2015). Immigration, housing discrimination and employment. *Economic Journal*, 125, F82–F114.
- Bonifazi, C., Heins, F., Strozza, S., & Vitiello, M. (2009). *The Italian transition from emigration to immigration country* (IRPPS Working Paper No. 24). Retrieved from Institute of Research on Population and Social Policies website: <http://www.irpps.cnr.it/e-pub/ojs/index.php/wp/article/view/24>
- Borjas, G. (1985). Self-selection and the earnings of immigrants. *American Economic Review*, 77, 531-553.
- Borjas, G. (1992). Ethnic capital and intergenerational mobility. *Quarterly Journal of Economics*, 107, 123-150.
- Borjas, G., & Bratsberg, B. (1996). Who leaves? The outmigration of the foreign-born. *Review of Economics and Statistics*, 78, 165–176.

- Bratsberg, B., Barth, E., & Raaum, O. (2006). Local unemployment and the relative wage of immigrants. *Review of Economics and Statistics*, 88, 243-263.
- Brücker, H., Fachin, S., & Venturini, A. (2011). Do foreigners replace native immigrants?. *Economic Modelling*, 28, 1078-1089.
- Cannari, L., Nucci, F., & Sestito, P. (2000). Geographic labour mobility and the cost of housing: evidence from Italy. *Applied Economics*, 32, 1899-1906.
- Chiswick, B. (1978). The effect of Americanisation on the earnings of foreign-born men. *Journal of Political Economy*, 86, 897-921.
- Chiswick, B. (1991). Speaking, reading, and earnings among low-skilled immigrants. *Journal of Labor Economics*, 9, 149-170.
- Chiswick, B., & Miller, P. (2005). Linguistic distance: A quantitative measure of the distance between English and other languages. *Journal of Multilingual and Multicultural Development*, 26, 1-11.
- Chiswick, B., & Miller, P. (2015). International migration and the economics of language. In B. Chiswick and P. Miller (Eds.) *Handbook on the economics of international migration* (pp. 211-269). Amsterdam: North-Holland.
- Constant, A., & Massey, D. S. (2003). Self-selection, earnings, and out-migration: A longitudinal study of immigrants to Germany. *Journal of Population Economics*, 16, 631-653.
- Cutler, D. M., & Glaeser, E. L. (1997). Are ghettos good or bad? *Quarterly Journal of Economics*, 112, 827-872.
- Danzer, A., & Yaman, F. (2013). Do ethnic enclaves impede immigrants' integration? Evidence from a quasi-experimental social-interaction approach. *Review of International Economics*, 21, 311-325.

- Del Boca, D., & Venturini, A. (2005). Italian migration. In K. F. Zimmermann (Ed.), *European migration: What do we know?* Oxford, UK: Oxford University Press.
- Dell'Aringa, C., Lucifora, C., & Pagani, L. (2015). Earnings differentials between immigrants and natives: The role of occupational attainment. *IZA Journal of Migration*, 4:8.
- De Haas, H., & Fokkema, T. (2011). The effects of integration and transnational ties on international return migration intentions. *Demographic Research*, 25, 755-782.
- De Palo, D., Faini, R., & Venturini, A. (2007). *The social assimilation of immigrants* (World Bank Social Protection Discussion Paper No. 0701). Retrieved from World Bank website: <http://documents.worldbank.org/curated/en/577831468161670123/The-social-assimilation-of-immigrants>
- Dustmann, C. (1996). Return migration: The European experience. *Economic Policy*, 11, 213-250.
- Dustmann, C. (2003). Return migration, wages differentials and the optimal migration duration. *European Economic Review*, 47, 353-367.
- Dustmann, C., & Van Soest, A. (2002). Language and the earnings of immigrants. *Industrial and Labour Relation Review*, 55, 473-492.
- Dustmann, C., & Fabbri, F. (2003). Language proficiency and labour market performance of immigrants in the UK. *Economic Journal*, 113, 695-717.
- Edin, P. A., & Gustavsson, M. (2008). Time out of work and skill depreciation. *Industrial and Labour Relations Review*, 61, 163-180.
- Fachin, S. (2007). Long-run trends in internal migrations in Italy. *Journal of Applied Econometrics*, 22, 401-428.

- Faini, R., Galli, G., Gennari, P., & Rossi, F. (1997). An empirical puzzle: Falling migration and growing unemployment differentials among Italian regions. *European Economic Review*, 41, 571-579.
- Fofi, G. (1975). *Immigrazione meridionale a Torino*. Milano: Laterza.
- Fratesi, U., & Percoco, M. (2013). Selective migration, regional growth and convergence: Evidence from Italy. *Regional Studies*, 48, 1650-1668.
- Fullin, G., & Reyneri, E. (2011). Low unemployment and bad jobs for new immigrants in Italy. *International Migration*, 49, 118-147.
- Hatton, T. J., & Leigh, A. (2011). Immigrants assimilate as communities, not just as individuals. *Journal of Population Economics*, 24, 389-419.
- Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, 47, 153-61.
- Istat (2016). *Indicatori demografici*. Roma: Istat.
- Mansoor, A., & Quillin, B. (2007). *Migration and remittances: Eastern Europe and the Former Soviet Union*. Washington, D.C: World Bank.
- Marinelli, E. (2012). Sub-national graduate mobility and knowledge flows: an exploratory analysis of onward- and return-migrants in Italy. *Regional Studies*, 47, 1618-1633.
- Mayr, K., & Peri, G. (2009). Brain drain and brain return: Theory and application to Eastern-Western Europe. *B.E. Journal of Economic Analysis & Policy*, 9, 1-52.
- Mocetti, S., & Porello, C. (2010). How does immigration affect native internal mobility? New evidence from Italy. *Regional Science and Urban Economics*, 40, 427-439.
- Nielsen, H. S., Rosholm, M., Smith, N., & Husted, L., (2004). Qualifications, discrimination, or assimilation? An extended framework for analysing immigrant wage gaps. *Empirical Economics*, 29, 855-883.

- Piazzalunga, D. (2015). Is there a double-negative effect? Gender and ethnic wage differentials in Italy. *LABOUR*, 29, 243-269.
- Piras, R. (2012). Internal migration across Italian regions: Macroeconomic determinants and accommodating potential for a dualistic economy. *The Manchester School*, 80, 499-524.
- Pugliese, E. (2006). *L'Italia tra migrazioni internazionali e migrazioni interne*. Bologna: Il Mulino.
- Rooth, D.-O., & Saarela, J. (2007). Selection in migration and return migration: Evidence from micro data. *Economics Letters*, 94, 90-95.
- Rosholm, M., Scott, K., & Husted, L. (2006). The times they are a-changin': Declining immigrant employment opportunities in Scandinavia. *International Migration Review*, 40, 318-347.
- Venturini, A. (2004). *Post-war migration in Southern Europe: An economic approach*. Cambridge, UK: Cambridge University Press.
- Venturini, A., & Villosio, C. (2008). Labour-market assimilation of foreign workers in Italy. *Oxford Review of Economic Policy*, 24, 517-541.

¹ For a survey, see Del Boca and Venturini (2005).

² Developed at LABORatorio Revelli (www.laboratoriorevelli.it/whip).

³ There is no attrition because it is compulsory for firms to provide information about their workers to INPS.

⁴ For an analysis of the wage gap for female immigrants in Italy, see Piazzalunga (2015).

⁵ This feature affects both immigrants and internal migrants.

⁶ Long-stay immigrants gained access to public employment only in 2013.

⁷ Often, this is a good proxy for the year of entrance in the country.

⁸ The summary statistics of the three groups are significantly different from each other.

⁹ Additional sources of data are described in the Appendix (Table A2).

¹⁰ See Adserà and Pytliková (2015) and Bakker et al. (2009) for further details.

¹¹ Following the literature, there is no correction on out-migration of native people. First, the gross emigration rate out of Italy was around 0.1% per annum during this period (Bonifazi, Heins, Strozza, & Vitiello, 2009). Second, WHIP allows the authors to track and follow workers when they move across Italian regions (thus internal migrants are always followed). Finally, the likelihood of workers definitively exiting Italian employment is 0.5 times higher for foreign immigrants than for stayers and internal migrants, even when individual, job and career characteristics are controlled for (Appendix Table A4).

¹² The same results hold also for the North-East. The high degree of heterogeneity among Italian regions in terms of both levels and dynamics of foreign and internal migration discourages regional disaggregated analyses.

¹³ Figure 2 does not include periods spent outside employment, which have a negative effect only on stayers' wages.

¹⁴ A test for common coefficient restrictions was run on a pooled regression of (a) immigrants and stayers, (b) immigrants and internal migrants, and (c) stayers and internal migrants. In (a) and (b) the null hypothesis that all the coefficients for immigrants are zero was rejected in both cases; in (c) the null was accepted for internal migrants.

¹⁵ In particular, Mocetti and Porello (2010) show that foreign immigration is associated with inflows of highly-educated internal migrants and the displacement of low-educated ones.

¹⁶ The authors estimate wage equations including cohort fixed effects (defined as year of entrance into the labour market), instead of individual fixed effects, and the interactions between cohort and experience (Figure 2).

¹⁷ Using jobs with a high share of foreign immigrants (instead of low-wage jobs) yields similar results.

Table 1. Selection equation

Foreign immigrants' probability of leaving		
Growth rate of real GDP p.c. in origin country	0.0093	***
	(0.0023)	
Synthetic real GDP p.c. growth rate of potential destination countries ^a	0.0448	***
	(0.0096)	
Months of employment	0.0119	***
	(0.0021)	
Months out of employment	0.0145	***
	(0.0015)	
Obs.	27,924	
Log likelihood	-12229.5	
χ^2	3700.22	
Prob> χ^2	0	

Standard errors clustered at the individual level in parentheses. * p < 0.10; ** p < 0.05; p < *** 0.01.

It includes also all variables in wage equation (see table 2).

^a The index is developed as follows: for each migrant community, the growth rate of real GDP per capita (p.c.) weighted by the flows of migration in the destination countries other than Italy is used. Additional details in Appendix A3.

Source: WHIP, own calculations.

Table 2. Wage equations

Log weekly wage	Foreign immigrants without duration Heckman correction		Foreign immigrants with duration Heckman correction		Internal migrants		Stayers	
	1		2		3		4	
Intercept	4.2665	***	4.4132	***	4.4935	***	4.5044	***
	(0.1844)		(0.1873)		(0.128)		(0.034)	
Age	0.0309	***	0.0301	***	0.0421	***	0.0527	***
	(0.0120)		(0.0094)		(0.008)		(0.003)	
Age sqr.	-0.0002	***	-0.0002	***	-0.0002	***	-0.0003	***
	(0.0001)		(0.0001)		(0.00004)		(0.00001)	
Months of employment	0.0035	**	0.0041	***	0.0032	***	0.0022	***
	(0.0014)		(0.0010)		(0.0006)		(0.0003)	
Months of employment sqr.	-0.000004	***	-0.00001	***	-0.000009	***	-0.000007	***
	(0.0000)		(0.0000)		(0.0000)		(0.0000)	
Months out of employment	0.0008		0.0011		-0.0004		-0.0006	**
	(0.0010)		(0.0007)		(0.0006)		(0.0003)	
Months of empl.*linguistic dist.	-0.0014		-0.0015	**				
	(0.0009)		(0.0007)					
Log value added	0.0759	***	0.2292	***	0.0616	***	0.0752	***
	(0.0240)		(0.0281)		(0.011)		(0.004)	
Regional unemployment rate	0.0008		-0.0012		-0.0007		-0.0022	***
	(0.0010)		(0.0007)		(0.001)		(0.000)	
Migrant community	-3.7520	**	-6.1943	***	-1.6862	***		
	(1.7560)		(1.6173)		(0.577)			
DIMR			0.0240	***				
			(0.0082)					
Obs.	27,924		27,924		60,678		359,527	
F	88.9	***	88.82	***	701.73	***	7193.68	***
Corr (u _i , Xb)	-0.4563		-0.4626		-0.2465		-0.3909	
R-sq: within	0.3616		0.3625		0.5261		0.604	
between	0.0688		0.0700		0.1988		0.1751	
overall	0.1453		0.1461		0.2720		0.2665	

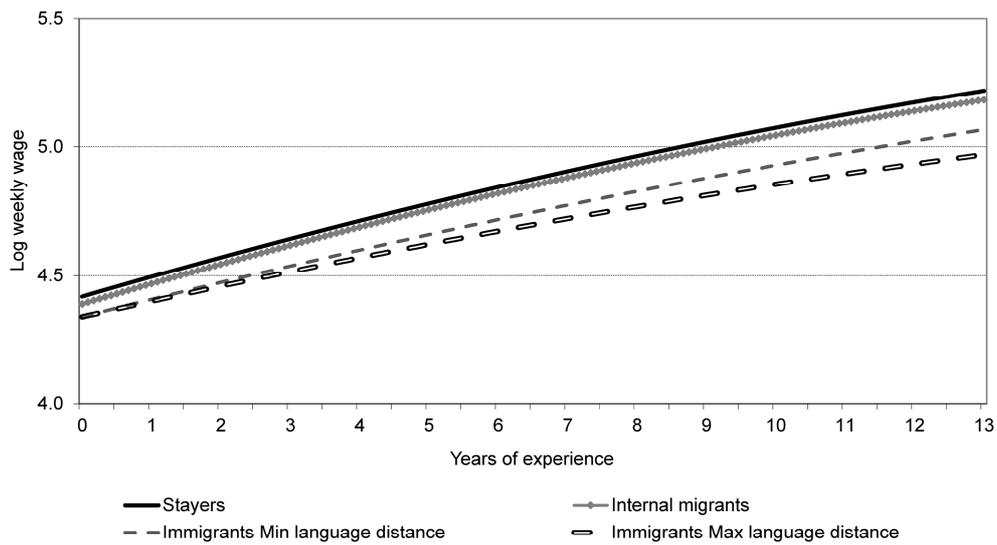
Bootstrapped standard errors clustered at the individual level in parentheses.

* p < 0.10; ** p < 0.05; p < *** 0.01.

Controlling for type of contract, firm size, occupation, sector, and region.

Source: WHIP, own calculations.

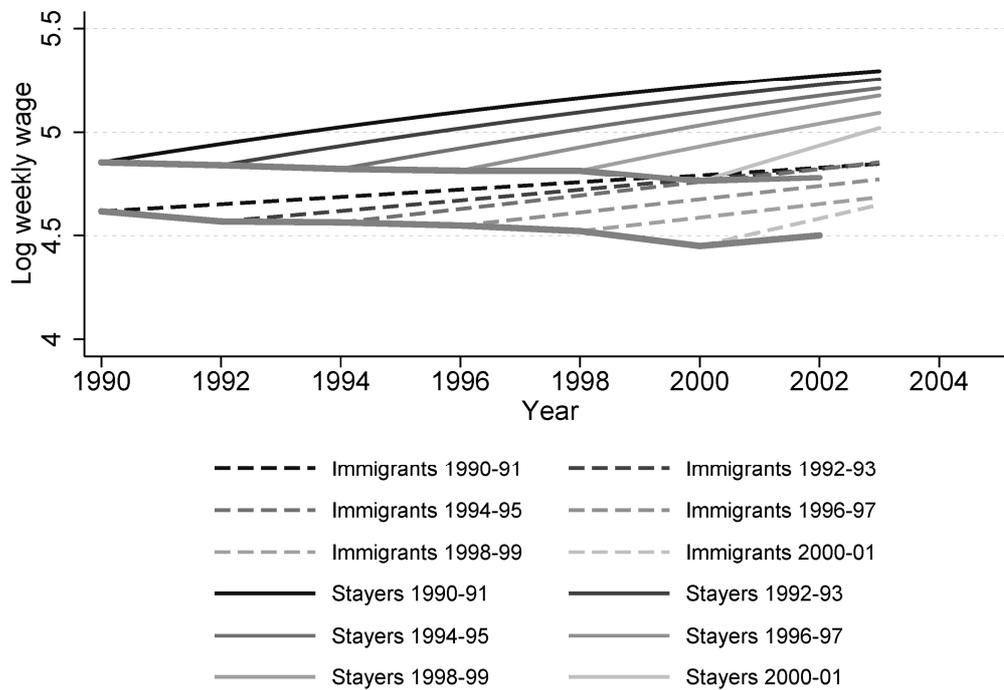
Figure 1. Experience-log wage profiles for foreign immigrants, internal migrants, and stayers



Source: WHIP, own calculations.

Note: Profiles refer to blue-collar males in manufacturing in the North-West entering the labour market at age 18.

Figure 2. Experience-log wage profiles for foreign immigrants and stayers, controlling for cohort fixed effects, real wages



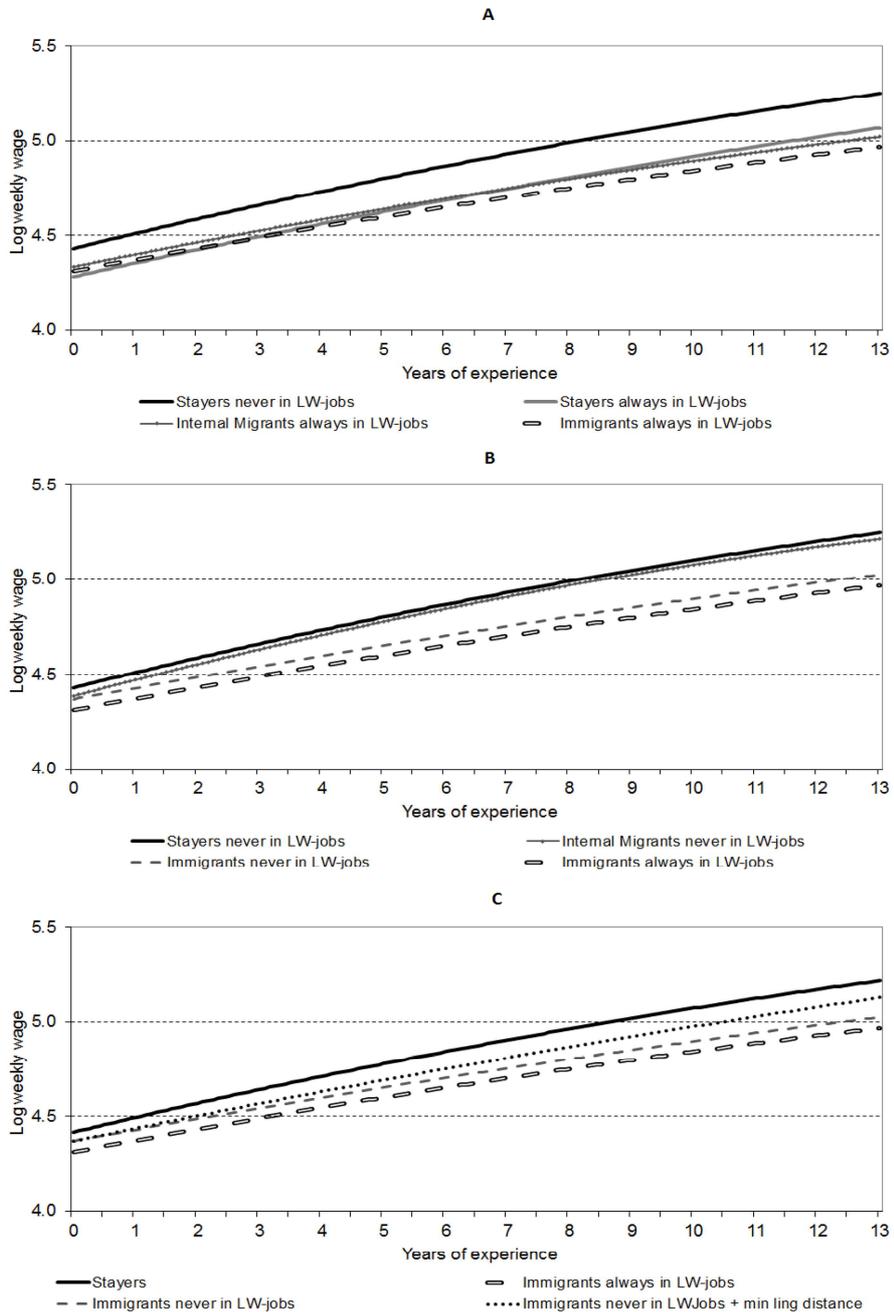
Source: WHIP, own calculations.

Note: Profiles refer to blue-collar males in manufacturing in the North West entering the labour market at age 18. For immigrants, we plotted the profiles for those speaking the closest language (minimum linguistic distance).

Cohorts correspond to two contiguous years of entrance into the labour market.

Results of wage equations including cohort fixed effects – which allow evaluating the differences in entry wages by cohort – as well as the interactions between cohort and experience – which allow evaluating the differences in wage growth across cohorts.

Figure 3. Experience-log wage profiles for foreign immigrants, internal migrants, and stayers, by type of job



Source: WHIP, own calculations.

Note: Profiles refer to blue-collar males in manufacturing in the North West entering the labour market at age 18. LW-jobs (low-wage jobs) are defined as those with an average wage for blue-collar and apprentices in 1987 below the first quartile. Unless otherwise specified, for immigrants average linguistic distance is used.

