

# Labour Market Assimilation of Recent Immigrants in Spain

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## Abstract

*This article provides a preliminary analysis of the employment and occupational assimilation of recent immigrant waves to the Spanish labour market as their residencies lengthen. Using Spanish data from the 2001 Population Census and the 2002 Earnings Structure Survey, we find evidence of immigrant employment and occupational assimilation significantly varying by gender, origin and educational attainment.*

## 1. Introduction

Migration remains nowadays one of the most important topics of interest in population economics. Academic research regarding migration has concentrated on the effect of immigrant on natives, migration policy, the determinants of migration and assimilation of migrants. This study focuses on the last of these four topics. In this regard, and since the seminal work of Chiswick (1978), a great deal of attention has been dedicated to assessing the labour market performance of immigrants relative to that of natives as they integrate to their host country. This is undoubtedly an important issue from both a social and an economic point of view for every country with a non-negligible immigration rate. In the case of Spain, where immigration has been increasing at an impressive pace during the past decade, a better understanding of how immigrants assimilate as their residence lengthens becomes crucial.

Preliminary findings by Chiswick (1978) for the United States found that, while immigrants earned significantly less than natives upon their arrival, they caught up with natives in terms of earnings as they integrated in the host country. Chiswick (1978) used cross-sectional studies and compared the earnings of immigrants relative to natives of different cohorts. However, these findings were later questioned by Borjas (1985, 1995), who challenged the

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assumption in these cross-section studies that the quality of immigrants across cohorts did not change, an assumption that Borjas (1985) refuted. Borjas showed that the quality of immigrants in the United States had declined over the decades and, as a result, assimilation was not taking place as rapidly as Chiswick (1978) suggested. Additional studies examining the assimilation of immigrants to countries other than the United States include those of Longva and Raaum (2003) for Norway; Hartog and Winkelmann (2003) for the Netherlands; Bevelander and Nielsen (2001) for Sweden; Constant and Massey (2003) for Germany; Wheatly Price (1999) and, more recently, Clark and Lindley (2005) for the UK, among others. This is the first empirical study on the labour market assimilation of immigrants in Spain.

This article fills this gap by focusing on two aspects of the labour market assimilation of immigrants. First, we examine immigrants' employment assimilation as captured by changes in the employment probability differential between similar immigrants and natives as immigrants' stay in Spain lengthens. This issue has been treated, among others, by Bevelander and Nielsen (2001) in Sweden, and Wheatly Price (1999) and Clark and Lindley (2005) in the UK. Second, we look at the assimilation occupation-wise of employed immigrants. We rank occupations on the basis of their average earnings according to the 2002 Spanish Earnings Structure Survey. Subsequently, we analyse immigrants' occupational assimilation as their residency in Spain lengthens relative to similarly skilled natives. The analysis is carried out separately by gender so as to uncover differences in the economic adaptation of male and female immigrants. In addition, we differentiate immigrants according to their place of origin. In our sample, approximately 14 per cent of immigrants come from EU15 countries, about 14 per cent from European countries outside the EU15, as much as 20 per cent from Africa and the vast majority (about 49 per cent of immigrants) from Latin America.

The article is organized as follows. The next section describes the recent trends in immigration in the Spanish case and provides a general characterization of recent immigrants. Section 3 discusses the methodology and section 4 describes the data used for the analysis. Section 5 presents the results and section 6 concludes the study.

## **2. Immigration in Spain**

### *Recent Immigration Trends*

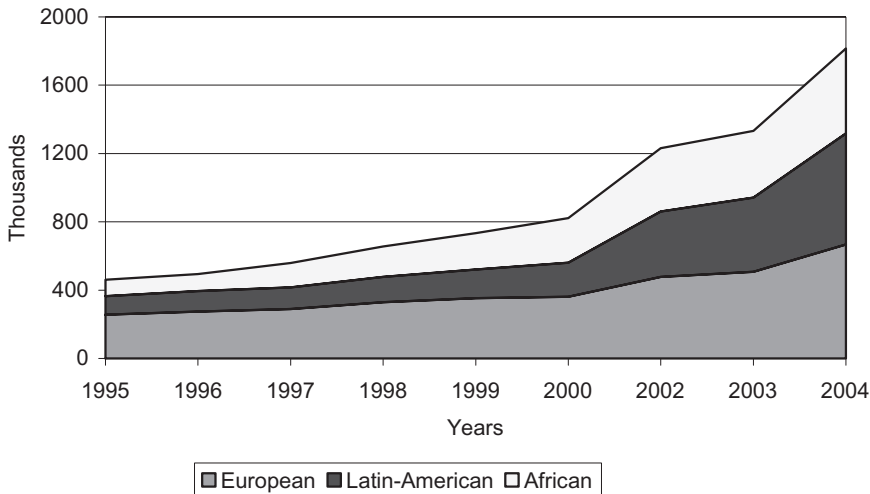
Spain has been traditionally a country of emigrants. During the 1850–1953 period, approximately 3.5 million Spaniards left for the Americas from regions such as Galicia, Asturias and the Canary Islands. Argentina, Uruguay, Brazil and Cuba were some of the most popular destinations of these emigrants. Spanish migrants also went to Africa from areas such as Murcia and the Balearic Islands, although to a lesser extent. However, Spain witnessed some significant changes in its migration patterns during the

twentieth century. First, about 74 per cent of Spanish emigrants chose Northern Europe as their destination between the mid-1950s and mid-1970s. Second, from the mid-1970s onwards, Spain became the host country of foreign labourers from Northern Africa and Latin America. Out-migration diminished during the international economic crisis of the early 1970s, whereas immigration grew at a steady pace. The transition from an immigrant-sending to an immigrant-receiving country was the byproduct of a larger shift in regional migration patterns. By the late 1980s and early 1990s, Mediterranean countries, such as Spain, Portugal and Italy, became immigrant-receiving nations as a result of a variety of factors, such as: (i) their geographical proximity to immigrant-sending regions, for example, Africa; (ii) the barriers to immigration in traditionally immigrant-receiving nations during the 1950s, 1960s and part of the 1970s, as was the case in Germany, Switzerland and France; and (iii) the improved economies of Mediterranean countries.

The largest immigration flow has taken place from the mid-1990s onwards. Figure 1 shows the changing composition of the immigrant stock from 1995 to 2004.<sup>1</sup> Although Europeans used to account for half of all immigrants in 1995, the stock of immigrants from Latin American and Africa has increased at a faster rate after the year 2000, catching up with the stock of European immigrants by the year 2004.

These recent and growing immigrant flows pose some questions regarding their assimilation to the Spanish labour market. A better understanding of

FIGURE 1  
Evolution of Foreign Residents in Spain by Place of Origin, 1995–2004.



Source: Anuario de Extranjería and Permanent Observatory of Immigration (Immigrants with Residence Permits).

these two aspects of immigrants' economic integration is, indeed, crucial in the development of social policies facilitating the integration of these newcomers to the Spanish society. However, we first discuss some of the key features of Spanish immigration law during the period covered by our analysis, that is, 1997–2001.

### *Key Features of Spanish Immigration Law*

The first piece of legislation regulating immigrant rights in Spain was passed in July 1985 when immigration flows were still small relative to those of EU nations such as Germany, France or Belgium. That law regulated relatively restrictive entry criteria for immigrants, such as short-lasting residence and work permits. Additionally, despite paying social security taxes when employed, the law did not permit immigrants the right to enjoy any social benefits. In an attempt to update the legislation, Congress approved a new law, Law 8/2000, in 2000. The new law addressed the regulation of new entry and work permit criteria similar to those in place in other EU member countries. However, extraordinary immigrant regularizations or amnesties granted by the government have emerged as the most common way of obtaining work permits during the past two decades following the regularizations of 1986, 1991, 1996 and 2000. In fact, a total of 400,000 immigrants regularized their statuses between 2000 and 2002. In order to become legal aliens, immigrants had to provide proof of one of the following: (i) residence since 1 June 1999, (ii) having held a work permit any time during the three-year period preceding 1 February 2000, (iii) being denied asylum before February 2000, (iv) having applied for any type of residence permit before 30 March 2000, or (v) family ties to legal residents or to individuals in any of the previous categories.

How may have the amnesty in 2000 affected the assimilation of immigrants in our data? This is a difficult question to answer because of the lack of individual-level information on those who benefited from the amnesty. Given the broadly defined group of undocumented immigrants who could have adhered to the amnesty, we would expect most of the undocumented immigrants in our sample with at least 1 year of residence to have legalized. Yet not all immigrants in our sample are undocumented. In fact, as we discuss in the data section, undocumented immigrants are likely to be under-represented in the Census. Therefore, although the estimated employment and occupation-wise assimilation rates of recently arrived immigrants could be biased upwards, it is difficult to gauge the extent to which this may be a problem. Doing so would require knowledge of the fraction of immigrants who are undocumented and the percentage of them who benefited from the amnesty in 2000. Furthermore, any bias would most likely affect the estimated assimilation rate of immigrants during the first year following migration but not necessarily the year-to-year differences in assimilation rates thereafter.

### 3. Methodology

The purpose of this study is to examine the assimilation process of recent immigrant waves to the Spanish labour market. We focus on two crucial aspects of labour market assimilation: employment and occupational attainment of immigrants relative to natives as their residence lengthens. We confine our analysis to working-age individuals. Once searching, immigrant  $i$  will work if the offered market wage,  $w_i$ , exceeds the reservation wage,  $w_i^r$ . We can thus define the following index function:

$$I_i = w_i - w_i^r = X_i\beta + \varepsilon_i, \quad (1)$$

where, if  $I_i > 0$ , the individual will choose to work and he/she will remain unemployed otherwise. Consequently, the employment likelihood is given by the equation

$$P_i = \Pr(I_i > 0) = \Pr(\varepsilon_i > -X_i\beta), \text{ where } \varepsilon_i \sim N(0, 1), \quad (2)$$

where  $X_i$  is a vector of socioeconomic characteristics affecting labour market earnings, such as age (a proxy for labour market experience), marital status and relationship to the household head, educational attainment, and region of residence.

Our main interest is in the estimated employment probability of immigrants relative to native-born individuals, which can be assessed by including an immigrant dummy in the vector  $X_i$ . Additionally, we are interested in learning about immigrant's assimilation occupation-wise relative to natives as their residence lengthens. Immigrants accumulate country-specific human capital — including language skills for those originating from non-Spanish speaking countries — as the number of years elapsed since migration increases. Therefore, the vector  $X_i$  also incorporates information on immigrants' years of residence in Spain to capture the expected positive correlation between years since migration and the employment likelihood of immigrants.

However, as pointed out by Borjas (1985), a single cross-section estimation of equation (2) will not help us assess the employment assimilation of immigrants unless it is assumed that the *quality* of immigrant cohorts has remained unchanged. This is not an unrealistic assumption in the Spanish case given the recent nature of Spanish immigration. Up to the mid 1970s, Spain had experienced more out-migration than immigration. In fact, the vast majority of immigrant flows have occurred during the late 1990s and early in the twenty-first century, resulting in a relatively short period of time for the quality of immigrant cohorts to have substantially changed. Nevertheless, we restrict our analysis to working-age immigrants with no more than five years of residence in Spain in 2001. This amounts to considering immigrants arriving in 1997 or later, an immigrant stock that accounts for approximately 60 per cent of all immigrants.<sup>2</sup> As such, we avoid including immigrants who may have been affected by the 1996 amnesty and lessen any deterministic biases

created by return migration.<sup>3</sup> Finally, we check that immigrants in the various cohorts are similar in terms of their *quality* as captured by some basic demographic characteristics. According to the data in Table 1, our various cohorts of immigrants do not differ much in terms of age and educational attainment — both proxies of their *quality* according to human capital theory. Yet differences in educational attainment increase as we add more recent immigrant waves. In particular, immigrants appear increasingly more likely to have less than a primary education, and the percentage of immigrants with secondary schooling diminishes. This trend may, if continued, make the appropriate analysis of immigrant assimilation more difficult. However, the observed changes in educational attainment are still small when we restrict our sample to immigrants with up to five years of residence in Spain.

Using the sample described above, we estimate equation (2) by gender to address their differential employment patterns as evidenced by post-estimation likelihood-ratio tests. Subsequently, we use the coefficient estimates from equation (2) to derive the predicted employment probabilities for a representative immigrant and native,  $\hat{P}_I$  and  $\hat{P}_N$ , respectively, evaluated at the average individual characteristics ( $\bar{X}$ ) of immigrants and natives, respectively. We also report the predicted employment probabilities for immigrants if they had the same characteristics as natives. In this manner, we are able to more accurately report differences in the employment likelihood of natives relative to immigrants net of any differences in their observed skills or qualifications. The following term gives an estimate of immigrants' assimilation to natives in terms of their employment likelihood,  $\hat{P}$ , as their residency lengthens:

$$\hat{P}_{I,5yrs} - \hat{P}_{I,0yrs} = (\hat{P}_N - \hat{P}_{I,0yrs}) - (\hat{P}_N - \hat{P}_{I,5yrs}). \quad (3)$$

However, the figures from equation (3) do not provide us with any information regarding the job found as reflected, for instance, by the occupational rank. There is no easy way to rank occupations as many job attributes are difficult to compare. While cognizant of this limitation, we assume that it is possible to rank occupations based on their remuneration. This assumption allows us to work with a variety of occupations and a simple framework according to which, once employed, the probability that immigrant  $i$ 's occupation has rank  $k = j$  is given by the probability that the score — estimated as a linear function of the migrant's personal characteristics and returns at various occupational ranks — plus the random error is within the range of cut-off points estimated for that specific rank  $j$  as follows:

$$\Pr(\text{rank of occupation}_i = j) = \Pr(k_{j-1} < X_{I_i}\alpha_1 + \dots + X_{K_i}\alpha_K + v_i \leq k_j), \quad (4)$$

where  $k = 1, \dots, j, \dots, K$  is the number of possible ranks in the model. Since the Population Census lacks information on workers' earnings, we use data

TABLE I  
Immigrant Characteristics by Years since Entry, Means and 95% Confident Intervals (in parentheses)

	Years since entry					
	0	1	2	3	4	5
Age	32.2 (31.9, 32.4)	32.3 (32.0, 32.5)	32.8 (32.6, 33.0)	33.9 (33.6, 34.2)	34.1 (33.6, 34.5)	35.6 (35.1, 36.1)
Education (%)						
Less than primary	0.10 (0.090, 0.104)	0.10 (0.097, 0.11)	0.13 (0.122, 0.137)	0.14 (0.134, 0.155)	0.15 (0.135, 0.161)	0.14 (0.123, 0.151)
Primary	0.18 (0.17, 0.19)	0.19 (0.181, 0.197)	0.20 (0.193, 0.211)	0.19 (0.184, 0.207)	0.19 (0.174, 0.203)	0.20 (0.183, 0.216)
Secondary	0.58 (0.57, 0.592)	0.58 (0.565, 0.585)	0.54 (0.527, 0.549)	0.52 (0.501, 0.531)	0.51 (0.491, 0.528)	0.51 (0.489, 0.531)
University	0.14 (0.128, 0.142)	0.13 (0.124, 0.138)	0.13 (0.121, 0.136)	0.14 (0.132, 0.152)	0.15 (0.138, 0.165)	0.15 (0.137, 0.167)
N	8,854	9,087	7,626	4,654	2,773	2,249

from the 2002 Spanish Earnings Structure Survey to devise an occupational ranking.<sup>4</sup> In particular, we assign the lowest rank order ( $k = 1$ ) to the occupation with the lowest average hourly wage and assign the highest rank order ( $k = K$ ) to the occupation with the largest average hourly wage. Assuming that the vector  $v_i$  in equation (4) is logistically distributed, we can estimate equation (4) as an ordered logit. The vector  $X_i$  contains a dummy for foreign-born as well as information on years of Spanish residency. Therefore, we are able to explore how immigrants assimilate to natives in terms of their occupational attainment as well as immigrants' occupational mobility. Given the revealed employment differences between immigrants and natives by gender and immigrant origin, this analysis is also carried out separately by gender and by immigrant origin. To facilitate the interpretation of the results, we report the odds ratios, computed as:

$$\text{odds}(\text{rank of occupation}_i = j) = \frac{P(\text{rank of occupation}_i > j)}{P(\text{rank of occupation}_i \leq j)}$$

Odds ratios are the ratios of the odds in two groups of interest. If the odds ratio is, for example, 0.75, it means that the outcome is 25 per cent less likely among immigrants relative to natives. In contrast, an odds ratio of 1.33 means that the outcome is 33 per cent more likely among immigrants than among natives.

#### 4. Data and some descriptive statistics

##### *The Data*

We use data from the 2001 Population Census. The Census has the advantage of, in principle, interviewing all immigrants independent of their legal status. Nonetheless, we are aware that an important fraction of unauthorized immigrants may not fill in the questionnaire and, as such, this group is likely to be under-represented in the Census. The 2001 Population Census was conducted by the Spanish Institute of Statistics during the last quarter of 2001. Around 13 million households and 40 million individuals were interviewed. The Census gathers information on personal and demographic characteristics (e.g. age, education, marital status, relationship to the household head, or province) and job characteristics (e.g. work status, occupation and industry). Additionally, the Census collects information on the country of origin and on the number of years elapsed since entry.

However, the Census is limited with respect to the list of variables for which data are compiled. For instance, it lacks information on where respondents completed their schooling; as such, we are left to assume that, for our group of recent migrants, this is likely to have taken place in their countries of origin.<sup>5</sup> Additionally, the Census does not contain any data on language



skills, on the type of employment (i.e. full-time vs part-time) or on the nationality of respondents' parents and grandparents. As such, for the purposes of this study, immigrants are defined as individuals reporting a foreign nationality.<sup>6</sup>

Our sample consists of working-age individuals on account of our interest in assessing immigrant assimilation to similar natives in terms of employment and occupational attainment. Moreover, in order to ensure the comparability of immigrants' performance in terms of cohort *quality*, we focus on recent immigrants with up to five years of residence in Spain, who accounted for almost 60 per cent of the immigrant stock in 2001.

Finally, given the lack of information on labour earnings in the Population Census, we extract average hourly wage data for each of the occupations in the 2002 Earnings Structure Survey, known by its acronym EES-02. The EES-02 contains individual information on 169,520 full-time workers (117,161 men and 52,359 women) from 21,621 establishments. The EES-02 survey includes a random sample of establishments in the manufacturing, construction and service industries. In addition to establishment-level information, the survey collects individual-level data on gross hourly wages and occupations held by workers at the two-digit ISCO-88 level. As such, we are able to construct average hourly wages for each of those occupations and use that information to devise an occupational ranking as explained in the methodology section.

### *Native and Recent Immigrant Profiles*

Table 2 shows some key features of our sample. On average, immigrants in our sample are 33 years old or about 5 years younger than their native counterparts. The incidence of household-head status is about the same for native and most immigrant women. The exception is women from EU15 countries, 40 per cent of whom are household heads, compared with 21 to 27 per cent in the case of other immigrants or natives, respectively. In the case of men, 49 of native men are household heads compared with only 40 per cent of immigrant men. Yet, as with EU15 women, this percentage reaches 66 per cent in the case of men from EU15 countries.

Residence-wise, our sample of recent immigrants have been living in Spain an average of 2 years. EU15 and African immigrants have the longest residencies (in the order of 2.1 to 2.2 years), whereas non-EU15 and Latino immigrants have the shorter residencies. Additionally, immigrant men have an educational attainment similar to that of their native counterparts. Only women seem to differ, with native women being, on average, more educated than their immigrant counterparts. Yet, we uncover significant educational differences across the various immigrant groups. For instance, more than 50 per cent of African immigrants have no more than a primary education, whereas this percentage is between 25 and 30 per cent for natives and most other immigrant groups. In contrast, 27 per cent of EU15 male immigrants have a university degree compared with 15 per cent of native men. The

TABLE 2  
Descriptive Statistics of the Sample: Means and Standard Deviations (Underneath)

	Natives		Immigrants		EU15		Non-EU15		Africa		Latinos	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Age	37.9	38.4	32.7	33.1	41.2	41.2	32.7	32.6	29.9	30.2	31.8	32.0
Head of Household	13.3	13.4	10.2	10.6	13.1	13.5	9.6	10.1	7.93	9.29	9.16	9.4
Married	0.50	0.43	0.49	0.44	0.47	0.49	0.49	0.44	0.47	0.41	0.47	0.44
Years since Entry	0.50	0.57	0.46	0.48	0.53	0.53	0.55	0.56	0.37	0.60	0.47	0.43
	0.50	0.49	0.50	0.49	0.50	0.50	0.50	0.50	0.48	0.49	0.50	0.49
	37.96	38.44	1.70	1.74	2.09	2.17	1.50	1.53	2.05	2.16	1.37	1.56
	13.29	13.36	1.45	1.51	1.64	1.67	1.31	1.36	1.49	1.56	1.30	1.45
Education												
Less than primary	0.07	0.045	0.14	0.10	0.03	0.03	0.09	0.07	0.33	0.35	0.06	0.06
	0.26	0.206	0.34	0.30	0.17	0.16	0.28	0.25	0.47	0.48	0.24	0.24
Primary	0.20	0.140	0.20	0.18	0.11	0.11	0.19	0.17	0.29	0.25	0.19	0.18
	0.40	0.347	0.40	0.38	0.31	0.31	0.39	0.38	0.45	0.43	0.39	0.38
Secondary	0.58	0.559	0.53	0.53	0.59	0.63	0.61	0.59	0.33	0.35	0.61	0.62
	0.49	0.497	0.50	0.49	0.48	0.48	0.49	0.49	0.47	0.47	0.48	0.48
University	0.15	0.256	0.14	0.14	0.27	0.23	0.11	0.17	0.06	0.05	0.14	0.14
	0.35	0.437	0.33	0.35	0.44	0.42	0.31	0.37	0.22	0.22	0.34	0.35
Work Status												
Employed	0.72	0.45	0.71	0.52	0.57	0.35	0.75	0.56	0.74	0.36	0.74	0.59
	0.44	0.50	0.45	0.50	0.49	0.47	0.43	0.49	0.44	0.48	0.44	0.49
Unemployed	0.09	0.11	0.15	0.13	0.10	0.10	0.16	0.14	0.17	0.13	0.16	0.13
	0.28	0.30	0.36	0.33	0.31	0.29	0.36	0.35	0.37	0.33	0.37	0.33
OLF	0.19	0.44	0.14	0.35	0.32	0.55	0.09	0.30	0.09	0.51	0.10	0.27
	0.38	0.50	0.34	0.47	0.47	0.49	0.29	0.46	0.29	0.50	0.30	0.45
N	657,670	655,367	18,468	16,775	2,575	2,242	2,636	2,299	4,850	2,138	7,625	9,583

OLF, Out of the Labour Force.

remaining immigrant groups show a significantly lower incidence of college education than comparable natives.

Lastly, immigrant and native men have similar employment rates. Although immigrant unemployment rates are approximately 6 percentage points higher, on average, their out of the labour force rates are 5 percentage points lower than those of natives. In contrast, despite having similar employment rates, native women's employment rates are about 7 percentage points lower than those of their immigrant counterparts because of native women's lower labour force participation rates. By immigrant origin, men and women from the EU15 countries have significantly lower employment rates than natives, yet their unemployment rates are quite comparable. Something similar is observed for African women. These findings suggest that these immigrant groups may simply be less likely to join the workforce and, perhaps, more likely to pursue other interests, such as studying or staying at home.

## **5. Immigrant labour market assimilation**

### *Immigrant Employment Assimilation*

Tables 3 and 4 shows the maximum likelihood estimates of equation (2) for men and women, respectively. The analysis is carried out separately by gender on account of the statistically significant differences between the male and female estimates from equation (2).<sup>7</sup> Additionally, we first carry out the analysis considering all immigrants together (column 1 in Tables 3 and 4). Subsequently, we allow for different effects among the immigrant groups being considered (i.e. Europeans from the EU15 countries, Europeans from non-EU15 countries, Africans and Latinos) to learn about their specific employment assimilation as their Spanish residency lengthens (columns 2 to 5 in Table 3 and 4).<sup>8</sup> In all instances, the comparison group are natives. Because we include dummy variables indicative of whether the migrant has been 1, 2, 3, 4 or 5 years in the country, the immigrant dummy simply reveals the differential employment likelihood of an immigrant (relative to a similar native) who has been in the country less than 1 year. Therefore, if we want to learn about differences in the employment likelihood of immigrants who have been in Spain for 1 year, we would add the estimated coefficients for the immigrant dummy and for the dummy capturing the return to 1 year of Spanish residence.

A couple of findings are worth discussing. First, immigrant men and women are significantly less likely to be employed than similar natives. On average, recent male and female immigrants (i.e. with less than 1 year of residence) have a 15-percentage point and a 4-percentage point lower likelihood of employment, respectively, than comparable natives. The magnitude of these employment gaps differs not only according to gender, but also depending on immigrants' origin. Specifically, immigrant men from the EU15 countries have the largest employment gap with respect to similar

TABLE 3  
 Probit of the Likelihood of Being Employed of Immigrant Men Relative to Natives:  
 Coefficients, (SE), [Marginal Effects]

<i>Years since entry</i>	<i>All immigrants</i>	<i>EU15</i>	<i>Non-EU15</i>	<i>Africa</i>	<i>Latinos</i>
Immigrant	-0.447*** (0.021) [-0.153]	-0.857*** (0.06) [-0.315]	-0.467*** (0.058) [-0.162]	-0.246*** (0.050) [-0.080]	-0.425*** (0.03) [-0.146]
Immigrant 1 year	0.281*** (0.03) [0.075]	0.195*** (0.08) [0.054]	0.275*** (0.080) [0.074]	0.171*** (0.070) [0.048]	0.332*** (0.04) [0.087]
Immigrant 2 years	0.388*** (0.03) [0.099]	0.215*** (0.083) [0.059]	0.311*** (0.087) [0.082]	0.324*** (0.067) [0.085]	0.472*** (0.05) [0.116]
Immigrant 3 years	0.403*** (0.04) [0.102]	0.190*** (0.086) [0.053]	0.588*** (0.113) [0.136]	0.395*** (0.076) [0.100]	0.489*** (0.07) [0.119]
Immigrant 4 years	0.334*** (0.05) [0.088]	0.315*** (0.101) [0.083]	0.300*** (0.147) [0.080]	0.399*** (0.09) [0.107]	0.335*** (0.08) [0.088]
Immigrant 5 years	0.214*** (0.05) [0.059]	0.202*** (0.100) [0.056]	0.577*** (0.161) [0.134]	0.226*** (0.09) [0.062]	0.322*** (0.10) [0.085]
Number of observations			676,138		
Wald Chi <sup>2</sup> (64)	135,138.37		135,215.06		
Prob. > Chi <sup>2</sup>	0.0000		0.0000		

*Notes:* The regressions include controls for age, age<sup>2</sup>, household-head status, marital status, educational attainment, province of residence and a constant term. An immigrant with less than 1 year of residence in Spain is used as the category of reference.

\*\*\* Signifies statistically different from zero at the 1% level or better; \*\* at the 5% level or better; \* at the 10% level or better.

natives, that is, in the order of 32 percentage points. In contrast, African immigrants are only 8 percentage points less likely to be employed than comparable natives. Among women, recent immigrants from the EU15 countries continue to show the largest employment gap with respect to similar natives (in the order of 26 percentage points), whereas recently arrived Latino women are statistically (if not economically as the marginal effect is practically zero) more likely to be employed than similar natives. As we shall discuss in what follows, EU15 immigrants may either come to the country for other purposes, for example, studying in the case of immigrants from EU15 countries, or may hold higher reservation wages as a by-product of their household non-labour incomes or unobserved skill levels. In contrast, African men and Latino women may have lower reservation wages than other immigrant men and women and, as a result, may display a smaller employment gap than similar natives. In those instances, further information regarding the type of employment held by those employed may serve as a better indicator of immigrant assimilation than simple differences in their employment likelihood.

TABLE 4  
 Probit of the Likelihood of Being Employed of Immigrant Women Relative to Natives:  
 Coefficients, (SE), [Marginal Effects]

<i>Years since entry</i>	<i>All immigrants</i>	<i>EU15</i>	<i>Non-EU15</i>	<i>Africa</i>	<i>Latinos</i>
Immigrant	-0.110*** (0.02) [-0.043]	-0.763*** (0.07) [-0.259]	0.003 (0.057) [0.000]	-0.344*** (0.07) [-0.129]	0.002 (0.03) [0.000]
Immigrant 1 year	0.260*** (0.03) [0.103]	0.187** (0.10) [0.074]	0.141** (0.08) [0.055]	0.298*** (0.10) [0.118]	0.274*** (0.04) [0.109]
Immigrant 2 years	0.232*** (0.032) [0.092]	0.282** (0.11) [0.112]	0.188*** (0.08) [0.074]	0.222* (0.09) [0.088]	0.285*** (0.04) [0.113]
Immigrant 3 years	0.145*** (0.04) [0.057]	0.126 (0.10) [0.050]	0.138 (0.105) [0.055]	0.237*** (0.09) [0.094]	0.222*** (0.05) [0.088]
Immigrant 4 years	0.009*** (0.04) [0.003]	0.279** (0.11) [0.111]	0.133 (0.13) [0.053]	0.144 (0.11) [0.057]	0.008 (0.06) [0.003]
Immigrant 5 years	0.064*** (0.05) [0.025]	0.490*** (0.11) [0.060]	0.167 (0.16) [0.066]	-0.129 (0.12) [-0.050]	0.166*** (0.07) [0.066]
Number of observations			672,142		
Wald Chi <sup>2</sup>	137,716.7		173,564.78		
Prob > Chi <sup>2</sup>	0.0000		0.0000		

*Notes:* The regressions include controls for age and age<sup>2</sup>, household head status, marital status, educational attainment, province of residence and a constant term. An immigrant with less than 1 year of residence in Spain is used as the category of reference.

\*\*\* Signifies statistically different from zero at the 1% level or better, \*\* at the 5% level or better and \* at the 10% level or better.

A second finding from the data in Tables 3 and 4 refers to the assimilation rate of immigrants to natives as the number of years since migration lengthens. In this regard, Tables 5–7 summarize some key findings. Specifically, according to the data in Table 5, the employment gap between native men and their immigrant counterparts narrows from 12 percentage points when immigrants first arrive in the country to about 2 percentage points 5 years later. Yet, the largest employment gap reduction occurs within the first year of residence, when the gap effectively disappears. As noted earlier in the paper, this fast assimilation rate could be biased upwards because of the 2000 amnesty to which most undocumented immigrants with at least 1 year of residence in 2001 may have adhered. Nonetheless, this bias may be restricted owing to the small fraction of undocumented immigrants in our sample. We also look at the year-to-year assimilation rate after the first year. In order to better do so, and because part of the employment gap between natives and immigrants may be explained by differences in their qualifications, we calculate the ‘counterfactual’ predicted employment gap, that is, assuming that immigrant men have the same observable characteristics as native men. This gap is reported in the last column of Table 5. Not surprisingly, the predicted

TABLE 5  
Differences in the Predicted Employment Probabilities of Immigrants Relative to Natives, by  
Region of Origin and by Years since Entry — Men

<i>Comparison groups</i>	<i>Predicted probability (1)</i>	<i>Predicted probability (2)</i>	<i>Diff. native-immigrant (1)</i>	<i>Diff. native-immigrant (2)</i>
Natives	0.725	0.725	—	
Immigrants 0 year	0.605	0.633	0.119***	0.09***
Immigrants 1 year	0.726	0.748	-0.0009	-0.023***
Immigrants 2 years	0.758	0.758	-0.033***	-0.033***
Immigrants 3 years	0.758	0.772	-0.032***	-0.047***
Immigrants 4 years	0.749	0.760	-0.024***	-0.035***
Immigrants 5 years	0.704	0.706	0.02***	0.019***
EU15 immigrants 0 year	0.501	0.458	0.224***	0.267***
EU15 immigrants 1 year	0.578	0.552	0.147***	0.173***
EU15 immigrants 2 years	0.583	0.566	0.141***	0.159***
EU15 immigrants 3 years	0.583	0.564	0.142***	0.161***
EU15 immigrants 4 years	0.632	0.610	0.093***	0.115***
EU15 immigrants 5 years	0.566	0.533	0.158***	0.192***
Non-EU15 immigrants 0 year	0.622	0.662	0.102***	0.063***
Non-EU15 immigrants 1 year	0.757	0.774	-0.031***	-0.049***
Non-EU15 immigrants 2 years	0.776	0.791	-0.051***	-0.066***
Non-EU15 immigrants 3 years	0.837	0.846	-0.117***	-0.121***
Non-EU15 immigrants 4 years	0.773	0.775	-0.047***	-0.05***
Non-EU15 immigrants 5 years	0.761	0.756	-0.036***	-0.031***
African immigrants 0 year	0.632	0.740	0.093***	-0.015***
African immigrants 1 year	0.696	0.770	0.028***	-0.045***
African immigrants 2 years	0.754	0.827	-0.028***	-0.102***
African immigrants 3 years	0.777	0.849	-0.052***	-0.124***
African immigrants 4 years	0.785	0.845	-0.059***	-0.12***
African immigrants 5 years	0.757	0.833	-0.031***	-0.108***
Latino immigrants 0 year	0.614	0.624	0.110***	0.101***
Latino immigrants 1 year	0.757	0.770	-0.032***	-0.045***
Latino immigrants 2 years	0.804	0.813	-0.078***	-0.088***
Latino immigrants 3 years	0.802	0.808	-0.077***	-0.083***
Latino immigrants 4 years	0.785	0.788	-0.059***	-0.063***
Latino immigrants 5 years	0.771	0.768	-0.045***	-0.043***

*Notes:* The predicted employment probability (1) refers to the predicted employment probability of a representative individual of each group. The predicted employment probability (2) is computed in all cases for a representative individual from the sample, only being different in their origin and (for immigrants) years since residence.

\*\*\* Signifies statistically different from zero at the 1% level or better; \*\* at the 5% level or better; \* at the 10% level or better.

employment gap between natives and immigrants is then reduced to 9 percentage points from the 12-percentage-point gap when their characteristics differ. In fact, immigrants, as a whole, are 2 percentage points more likely to be employed than similar natives 1 year after migration.

In addition to differences in their qualifications, immigrant assimilation in terms of employment also varies according to immigrants' origin. According to the last column of Table 5, African men are actually more likely to be at

TABLE 6  
Differences in the Predicted Employment Probabilities of Immigrants Relative to Natives, by  
Region of Origin and by Years since Entry — Women

<i>Comparison groups</i>	<i>Predicted probability (1)</i>	<i>Predicted probability (2)</i>	<i>Diff. native-immigrant (1)</i>	<i>Diff. native-immigrant (2)</i>
Natives	0.447	0.447	—	
Immigrants 0 year	0.448	0.453	-0.001	-0.006
Immigrants 1 year	0.562	0.570	-0.115***	-0.10***
Immigrants 2 years	0.562	0.569	-0.115***	-0.122***
Immigrants 3 years	0.541	0.544	-0.093***	-0.097***
Immigrants 4 years	0.496	0.498	-0.048***	-0.051***
Immigrants 5 years	0.515	0.513	-0.068***	-0.066***
EU15 immigrants 0 year	0.273	0.244	0.173***	0.203***
EU15 immigrants 1 year	0.336	0.306	0.111***	0.141***
EU15 immigrants 2 years	0.372	0.369	0.074***	0.078***
EU15 immigrants 3 years	0.342	0.322	0.105***	0.125***
EU15 immigrants 4 years	0.395	0.357	0.051***	0.090***
EU15 immigrants 5 years	0.426	0.443	0.020***	0.004
Non-EU15 immigrants 0 year	0.483	0.496	-0.035***	-0.049***
Non-EU15 immigrants 1 year	0.574	0.573	-0.126***	-0.126***
Non-EU15 immigrants 2 years	0.613	0.607	-0.165***	-0.160***
Non-EU15 immigrants 3 years	0.573	0.571	-0.126***	-0.124***
Non-EU15 immigrants 4 years	0.596	0.565	-0.122***	-0.118***
Non-EU15 immigrants 5 years	0.557	0.556	-0.109***	-0.109***
African immigrants 0 year	0.296	0.405	0.150***	0.042***
African immigrants 1 year	0.400	0.486	0.046***	-0.039***
African immigrants 2 years	0.380	0.498	0.066***	-0.051***
African immigrants 3 years	0.402	0.539	0.045***	-0.092***
African immigrants 4 years	0.355	0.478	0.091***	-0.031***
African immigrants 5 years	0.311	0.411	0.135***	0.036***
Latino immigrants 0 year	0.497	0.496	-0.050***	-0.049
Latino immigrants 1 year	0.614	0.617	-0.166***	-0.170***
Latino immigrants 2 years	0.639	0.650	-0.192***	-0.203***
Latino immigrants 3 years	0.640	0.635	-0.193***	-0.188***
Latino immigrants 4 years	0.570	0.570	-0.123***	-0.123***
Latino immigrants 5 years	0.633	0.630	-0.185***	-0.183***

*Notes:* The predicted employment probability (1) refers to the predicted employment probability of a representative individual from each group. The predicted employment probability (2) is computed in all cases for a representative individual of the sample, only being different in their origin and (for immigrants) years since residence.

\*\*\* Signifies statistically different from zero at the 1% level or better; \*\* at the 5% level or better; \* at the 10% level or better.

work than similar native men since their arrival in the country once the comparison is restricted to similarly skilled individuals. Latino men and their non-EU15 counterparts adjust rather quickly, with their employment disadvantage vanishing 1 year after migration — an effect that may have been partially driven by the 2000 amnesty. Only immigrants from the EU15 countries continue to display a rather large employment gap with respect to similarly skilled natives 5 years after migration. To the extent that these immigrants are relatively well educated (as shown in Table 2) and probably

TABLE 7  
Employment Assimilation by Immigrant Origin after 5 Years  
of Stay in Host Country

<i>Immigrant groups</i>	<i>Men</i>	<i>Women</i>
All	0.099	0.067
EU15	0.065	0.153
Non-EU15	0.139	0.074
African	0.125	0.015
Latino	0.157	0.136

*Note:* Assimilation is measured as:  $\hat{P}_{I,5yrs} - \hat{P}_{I,0yrs} = (\hat{P}_N - \hat{P}_{I,0yrs}) - (\hat{P}_N - \hat{P}_{I,5yrs})$ .

enjoy the higher degree of skill transferability within Europe, these differences are suggestive of differences in their willingness-to-work with respect to other immigrant groups. Another feature worth noting is the sometimes inverse U-pattern in immigrant assimilation. This could be indicative of diminishing returns to Spanish specific skills that are key in explaining their assimilation.

Table 6 also presents the employment assimilation of immigrant women, for whom assimilation appears to take place at a faster pace than for men. To start, immigrant women have the same employment likelihood as their native counterparts upon arrival. This similarity disappears over time as immigrant women become up to 7 percentage points more likely to be at work than their native equivalents 5 years after migration. As with men, once we account for differences in their skills or qualifications, native women are more likely to be employed than women from the EU15 countries. Yet, this initial discrepancy (of up to 20 percentage points) vanishes 5 years after migration. Native women are also 4 percentage points more likely to be employed than similarly skilled African women (i.e. last column of Table 6). However, unlike EU15 women, African women continue to show a similar gap 5 years after arrival in the country. Finally, it is worth noting the widening of the employment differences between Latino women and women from non-EU15 countries with respect to native women. Specifically, Latino women and female immigrants from non-EU15 countries become up to 18 and 11 percentage points more likely to be employed, respectively, than similarly skilled native women within the period of 5 years.

Finally, Table 7 shows the employment assimilation that takes place for each immigrant group over the course of 5 years. During that time period, immigrant men and women improve their employment likelihood by an average of 10 and 7 percentage points, respectively. As noted in the discussion of Table 5, Latino men and immigrant men from countries outside the EU15 block assimilate at faster rates than the average immigrant, whereas immigrant men from other EU15 countries do so at a slower pace. Lastly, African men already have higher employment likelihoods than similar



natives upon arrival, but they further accentuate their employment differences with respect to natives over time. Likewise, Latino women and their immigrant counterparts from the non-EU15 countries continue to widen their employment advantage with respect to native women at a relatively fast pace with time since migration. Yet, it is immigrant women from EU15 countries who assimilate at the fastest pace to natives by closing their employment gap by 15 percentage points. In contrast, African women endure the slowest adjustment rate to natives employment-wise.

What may be causing these differences in the employment rates of the various immigrant groups? Given the limited information contained in the Census, we can only hypothesize as to why these differences exist based on the characteristics of each immigrant group. For instance, immigrants from EU15 countries may have higher household incomes and skill levels, both of which would raise their reservation wages and lower their employment likelihood with respect to natives and other immigrant groups. In contrast, African immigration may be fuelled by economic need. If this is the case, African immigrants may be more likely to be at work than similarly skilled natives. Yet, their advancement may be slower than that of other immigrant groups because of differences in skill transferability (on account of greater disparities between the Spanish and the African educational systems) or discrimination. Finally, the faster employment assimilation of Latino immigrants with respect to the assimilation pace of immigrants from the non-EU15 countries could be explained by unobserved differences in language skills between the two groups — after all, Latinos often come from Spanish-speaking countries.

### *Immigrant Assimilation in Terms of Occupational Attainment and Mobility*

#### *(a) Some descriptive evidence by gender and educational attainment*

The results from Tables 2 to 7 indicate that immigrants are, indeed, less likely than similarly skilled native-born individuals to be employed. However, assimilation does seem to occur, with the likelihood of finding a job increasing with the time spent in Spain. However, in some instances, as is the case with immigrants from the EU15 countries, lower employment likelihoods may not be indicative of poor assimilation if immigrants are choosing to search longer for high quality jobs.

In order to make some inferences about the quality of the jobs held by immigrants in our sample, we first rank all occupational categories in the 2001 Census in terms of their aggregate average hourly wage. Because of the lack of information on labour earnings in the Census, we use average hourly wages for each of the occupational categories of interest from the 2002 Spanish Survey on the Structure of Earnings. Because of the small number of observations, some occupations are bundled together to ensure that all categories have, at the minimum, 2 per cent of the overall number of immigrants in the Census sample.<sup>9</sup> Altogether, our ranking of occupations takes values

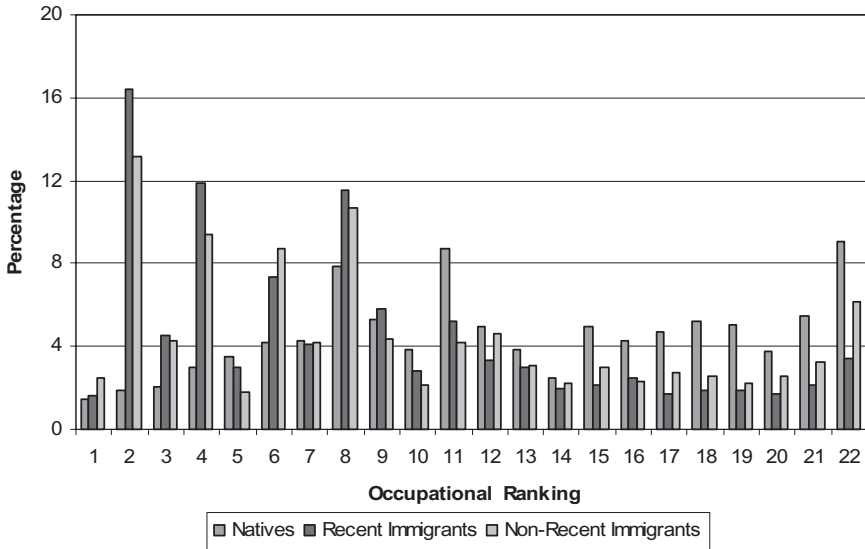
TABLE 8  
Average Occupational Rank by Immigrant Origin and Years of Residence

<i>Groups</i>	<i>Men (rank varies from 1 to 22)</i>			<i>Women (rank varies from 1 to 17)</i>		
	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>
Natives	12.9	5.95	472,817	8.9	5.1	292,568
Immigrants 0 year	8.5	5.9	2,783	4.4	4.6	1,927
Immigrants 1 year	8.4	5.7	3,510	4.4	4.6	2,446
Immigrants 2 years	8.8	5.8	3,215	4.7	4.8	1,944
Immigrants 3 years	9.1	5.9	1,882	5.3	4.9	1,194
Immigrants 4 years	9.4	6.4	1,044	5.6	5.2	695
Immigrants 5 years	9.8	6.4	764	6.2	5.4	604
EU15 immigrants 0 year	14.0	6.7	294	9.5	5.2	130
EU15 immigrants 1 year	13.8	6.7	261	9.5	5.2	135
EU15 immigrants 2 years	14.2	6.4	299	9.3	5.4	158
EU15 immigrants 3 years	13.5	6.5	257	9.8	5.2	128
EU15 immigrants 4 years	13.9	6.4	181	10.1	5.4	109
EU15 immigrants 5 years	13.8	6.6	161	10.5	5.1	121
Non-EU15 immigrants 0 year	7.4	5.2	423	4.0	4.1	305
Non-EU15 immigrants 1 year	7.5	4.9	624	4.5	4.5	369
Non-EU15 immigrants 2 years	8.8	5.3	479	4.6	4.6	327
Non-EU15 immigrants 3 years	8.9	5.6	262	4.8	4.7	156
Non-EU15 immigrants 4 years	9.5	5.7	111	5.7	5.1	80
Non-EU15 immigrants 5 years	9.7	6.7	65	5.7	4.9	51
African immigrants 0 year	6.6	5.3	571	4.7	3.7	121
African immigrants 1 year	6.6	5.1	681	4.5	4.1	144
African immigrants 2 years	7.2	5.2	970	4.5	4.1	191
African immigrants 3 years	6.8	4.8	663	4.3	3.8	165
African immigrants 4 years	6.6	5.3	396	3.7	3.7	88
African immigrants 5 years	7.3	5.2	300	4.5	4.1	63
Latino immigrants 0 year	8.4	5.5	1,403	3.9	4.4	1,340
Latino immigrants 1 year	8.6	5.5	1,849	4.0	4.3	1,750
Latino immigrants 2 years	8.7	5.5	1,310	4.3	4.6	1,201
Latino immigrants 3 years	9.4	5.8	567	4.8	4.8	676
Latino immigrants 4 years	10.2	6.2	297	4.7	4.7	384
Latino immigrants 5 years	10.6	6.0	184	5.4	5.1	339

ranging from 1 to 22 in the case of men and from 1 to 17 in the case of women, with the worst paid occupation taking the value of 1.

Table 8 shows the mean occupational rank for natives and immigrants in our sample. In the latter case, we distinguish according to immigrants' origin and length of residence in Spain. Native men occupy higher ranked jobs than immigrants as a whole, even when compared with immigrants with 5 years of residence. Yet, origin-wise, EU15 male immigrants work, on average, in higher ranked occupations than their native counterparts. Additionally, possibly as a byproduct of their higher rank, they do not experience as much upward occupational mobility as other immigrant groups. In contrast, African men not only perform worse than native men occupation-wise, but also experience the least upward mobility. Like their male counterparts, native women hold, for the most part, higher ranked occupations than most

FIGURE 2  
Occupational Distribution — All Educational Levels (Men).



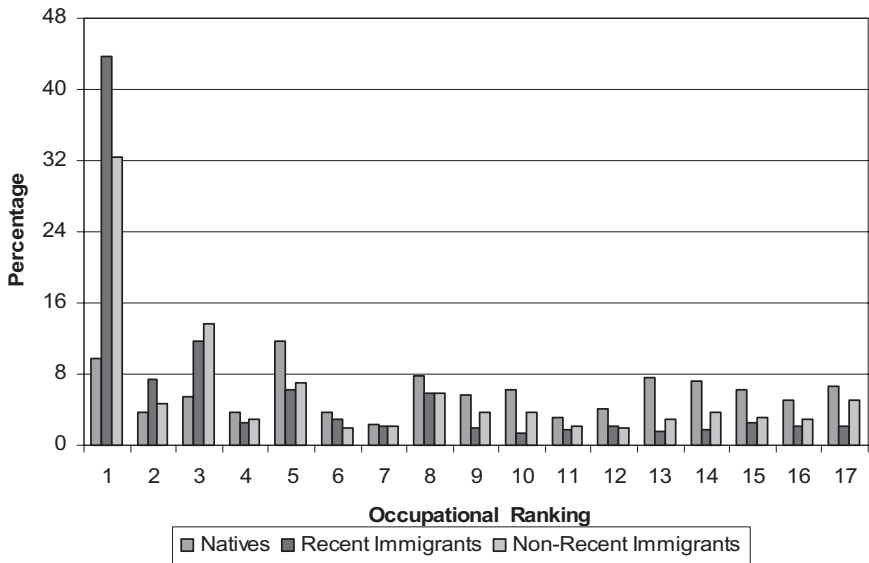
immigrant women — the exception being EU15 women. In contrast, African women work at lower ranked occupations than native women and practically lack any upward occupational mobility.

Further descriptive evidence on native and immigrant occupational attainment is provided in Figures 2 and 3. These figures show the occupational distribution of male and female natives, recent immigrants (with 0 or 1 year of residence) and less-recent immigrants (with 4 or 5 years of residence). The ranking of occupations is measured along the X-axis. Figure 2 shows that native men have a higher occupational attainment than immigrant men. Nonetheless, the fact that non-recent immigrants are better off occupation-wise than their recent counterparts suggests the existence of some upward occupational mobility as immigrants' residency lengthens. Similar patterns are observed for women in Figure 3, except that, relative to men, working women are significantly segregated into lower paid occupations.<sup>10</sup>

*(b) Regression-based findings on immigrant occupational assimilation*

The descriptive evidence hints at the lower occupational attainment on the part of immigrants relative to natives. Yet, there seems to exist some evidence of occupational mobility on the part of immigrants, particularly highly educated migrants. In light of the previously found gender differences in employment patterns, we estimate equation (4) separately for men and women. Additionally, we estimate our model separately by respondents' educational attainment.<sup>11</sup> The model is first jointly estimated for natives and all immigrants together. Subsequently, with the intent of gauging the potential impact

FIGURE 3  
Occupational Distribution — All Educational Levels (Women).



that time spent in Spain may have on immigrants' occupational assimilation according to their origin, we re-estimate the model allowing for different effects for each group of immigrants. The comparison group continues to be natives. The estimation is carried out via an ordered logit. We report the estimated odds ratios for the dummies capturing years elapsed since migration to assess the degree of occupational assimilation as immigrants' residency lengthens. Table 9 shows the estimated odds ratios for men's (top panel) and women's (bottom panel) occupational assimilation. Subsequently, Tables 10 and 11 explore differences in the occupational assimilation rates of men and women with varying educational attainment.<sup>12</sup> As with the analysis of immigrant employment assimilation, because the analysis includes dummy variables indicative of whether the migrant has been 1, 2, 3, 4 or 5 years in the country, the immigrant dummy simply reveals the odds of holding a higher ranked occupation (vs a lower ranked occupation) of an immigrant (relative to a similar native) who has been in the country less than 1 year. If we want to learn about how these odds change for an immigrant who has been in Spain for 1 year, we need to multiply the estimated odds for the immigrant dummy and the dummy capturing the return to 1 year of Spanish residence as we shall illustrate in what follows.

*Occupational assimilation by gender.* According to the odds ratios in Table 9, male and female immigrants show a lower occupational attainment than their native counterparts. Specifically, relative to natives, the odds of holding a higher ranked occupation (vs a lower ranked occupation) are 71 per cent

TABLE 9  
 Ordered Logit Estimates — Odds Ratios Dependent Variable: Occupational Ranking All Educational Levels

<i>Comparison groups (Control group: natives)</i>	<i>Panel A: men (22 occupational categories) (N = 486,374)</i>				
	<i>All immigrants</i>	<i>EU15</i>	<i>Non-EU15</i>	<i>Africa</i>	<i>Latino</i>
Immigrant	0.293*** (0.010)	1.266 (0.136)	0.236*** (0.021)	0.244*** (0.015)	0.275*** (0.013)
Immigrants 1 year	0.952 (0.047)	0.760 (0.131)	0.838 (0.097)	1.034 (0.097)	0.997 (0.065)
Immigrants 2 years	1.111*** (0.056)	0.863 (0.132)	1.22** (0.150)	1.221*** (0.107)	0.988 (0.072)
Immigrants 3 years	1.261*** (0.073)	0.735 (0.119)	0.307** (0.196)	1.078 (0.101)	1.407*** (0.131)
Immigrants 4 years	1.273*** (0.093)	0.907 (0.168)	1.579*** (0.300)	0.968 (0.108)	1.244** (0.165)
Immigrants 5 years	1.471*** (0.119)	0.830 (0.165)	1.697*** (0.487)	1.191 (0.151)	1.520*** (0.216)
<i>Comparison group (Control group: natives)</i>	<i>Panel B: women (17 occupational categories) (N = 301,895)</i>				
	<i>All immigrants</i>	<i>EU15</i>	<i>Non-EU15</i>	<i>Africa</i>	<i>Latino</i>
Immigrant	0.179*** (0.009)	1.103 (0.134)	0.165*** (0.018)	0.414*** (0.055)	0.140*** (0.009)
Immigrants 1 year	1.000 (0.072)	0.948 (0.192)	1.105 (0.182)	0.893 (0.198)	0.994 (0.085)
Immigrants 2 years	1.192*** (0.091)	0.977 (0.189)	0.972 (0.176)	1.060 (0.209)	1.129** (0.105)
Immigrants 3 years	1.640*** (0.138)	0.992 (0.199)	1.441** (0.295)	1.135 (0.217)	1.453*** (0.163)
Immigrants 4 years	1.691*** (0.171)	1.236 (0.282)	2.046*** (0.562)	0.654** (0.171)	1.368*** (0.181)
Immigrants 5 years	2.196*** (0.232)	1.440** (0.329)	2.207*** (0.742)	1.135 (0.314)	1.721*** (0.240)

*Notes:* The values for the dependent variable range from 1 to 22 in the case of men and from 1 to 17 in the case of women. The smallest (highest) value is taken by that occupation or group of occupations with the lowest (highest) average gross hourly earnings in 2002. Estimations also include age, education, indicator for marital status and region dummies (52 province dummies). Standard errors are computed using White's variance estimator.

*Source:* Earnings Structure Survey, EES-02.

\*\*\* Signifies statistically different from zero at the 1% level or better; \*\* at the 5% level or better; \* at the 10% level or better.

lower (i.e.  $(0.293 - 1) = -0.707$ ) for male immigrants and 82 per cent lower (i.e.  $(0.179 - 1) = -0.82$ ) for female immigrants. Yet the figures for all immigrants in column 1 also provide evidence of upward occupational mobility as immigrants' Spanish residency lengthens. In particular, male and female immigrants with 5 years of residence improve their occupational attainment relative to natives as evidenced by the fact that they only have a 57 per cent (i.e.  $((0.293 * 1.471) - 1) = -0.569$ ) and 61 per cent (i.e.  $((0.179 * 2.196) - 1) = -0.607$ ) lower likelihood of holding a higher ranked occupation, respectively.

TABLE 10  
 Ordered Logit Estimates — Odd Ratios Dependent Variable: Occupational Ranking Primary  
 Educational Attainment

<i>Comparison group (Control group: natives)</i>	<i>Panel A: men (22 occupational categories) (N = 122,091)</i>				
	<i>All immigrants</i>	<i>EU15</i>	<i>Non-EU15</i>	<i>Africa</i>	<i>Latino</i>
Immigrant	0.281*** (0.016)	0.889 (0.232)	0.331*** (0.047)	0.222*** (0.016)	0.339*** (0.031)
Immigrants 1 year	1.142** (0.086)	0.645 (0.271)	1.005 (0.193)	1.166** (0.122)	1.069 (0.129)
Immigrants 2 years	1.202*** (0.094)	1.301 (0.526)	1.025 (0.228)	1.332*** (0.134)	0.998 (0.132)
Immigrants 3 years	1.271*** (0.111)	1.699 (0.753)	1.207 (0.292)	1.153 (0.125)	1.538*** (0.260)
Immigrants 4 years	1.058 (0.113)	1.158 (0.484)	0.939 (0.276)	1.012 (0.126)	1.199 (0.323)
Immigrants 5 years	1.135*** (0.145)	1.233 (0.611)	0.663 (0.309)	1.111 (0.172)	1.220 (0.300)
<i>Comparison group (Control group: natives)</i>	<i>Panel B: women (17 occupational categories) (N = 52,575)</i>				
	<i>All immigrants</i>	<i>EU15</i>	<i>Non-EU15</i>	<i>Africa</i>	<i>Latino</i>
Immigrant	0.316*** (0.028)	0.815 (0.289)	0.241*** (0.042)	0.696*** (0.116)	0.280*** (0.029)
Immigrants 1 year	1.051 (0.122)	0.686 (10.341)	1.794*** (0.484)	0.822 (0.200)	0.945 (0.135)
Immigrants 2 years	1.169 (0.139)	0.452 (0.705)	1.495 (0.429)	0.823 (0.190)	0.972 (0.146)
Immigrants 3 years	1.533*** (0.201)	0.875 (0.499)	1.850*** (0.557)	0.918 (0.201)	1.403 (0.278)
Immigrants 4 years	1.194 (0.191)	1.604 (0.837)	2.201*** (0.870)	0.465*** (0.129)	0.997 (0.239)
Immigrants 5 years	1.460*** (0.248)	2.356 (1.635)	2.134*** (0.702)	1.193 (0.341)	1.146 (0.292)

*Notes:* The values for the dependent variable range from 1 to 22 in the case of men and from 1 to 17 in the case of women. The smallest (highest) value is taken by that occupation or group of occupations with the lowest (highest) average gross hourly earnings in 2002. Estimations also include age, education, indicator for marital status and region dummies (52 province dummies). Standard errors are computed using White's variance estimator.

*Source:* Earnings Structure Survey (EES-02).

\*\*\* Signifies statistically different from zero at the 1% level or better; \*\* at the 5% level or better; \* at the 10% level or better.

*Occupational assimilation by immigrant origin.* Are there significant differences in the occupational attainment and mobility of immigrants by origin? Columns 2 to 5 in Table 9 address this question. A few findings are worth emphasizing. First, there are significant differences in the occupational attainment of immigrant men and women relative to similarly skilled natives, with the exception of EU15 immigrants. Indeed, immigrant men and women from any of the countries in the EU15 block enjoy similar occupational achievements to those of similarly skilled natives. This similarity between the two groups may be, in part, due to greater skill transferability across European countries as evidenced by some long-established educational

TABLE 11  
 Ordered Logit Estimates — Odd Ratios Dependent Variable: Occupational Ranking  
 Secondary Educational Attainment

<i>Comparison group (Control group: natives)</i>	<i>Panel A: men (22 occupational categories) (N = 283,657)</i>				
	<i>All immigrants</i>	<i>EU15</i>	<i>Non-EU15</i>	<i>Africa</i>	<i>Latino</i>
Immigrant	0.277*** (0.013)	1.327** (0.208)	0.193*** (0.022)	0.262*** (0.031)	0.249*** (0.015)
Immigrants 1 year	0.914 (0.060)	0.703 (0.176)	0.950 (0.138)	0.821 (0.157)	1.022 (0.082)
Immigrants 2 years	1.153*** (0.079)	0.737 (0.164)	1.586*** (0.246)	1.103 (0.182)	1.096 (0.097)
Immigrants 3 years	0.330*** (0.105)	0.599*** (0.137)	1.555*** (0.289)	1.033 (0.174)	1.441*** (0.168)
Immigrants 4 years	1.463*** (0.155)	0.846 (0.224)	2.199*** (0.540)	0.836 (0.189)	1.439*** (0.246)
Immigrants 5 years	1.754*** (0.202)	0.918 (0.278)	2.689*** (0.915)	1.341 (0.294)	1.571*** (0.300)
<i>Comparison group (Control group: natives)</i>	<i>Panel B: women (17 occupational categories) (N = 16,6173)</i>				
	<i>All immigrants</i>	<i>EU15</i>	<i>Non-EU15</i>	<i>Africa</i>	<i>Latino</i>
Immigrant	0.148*** (0.009)	1.120 (0.190)	0.172*** (0.022)	0.280*** (0.051)	0.117*** (0.008)
Immigrants 1 year	1.028 (0.087)	1.185 (0.351)	0.999 (0.186)	0.957 (0.336)	1.054 (0.103)
Immigrants 2 years	1.031 (0.094)	0.866 (0.245)	0.791 (0.165)	0.887 (0.296)	1.042 (0.113)
Immigrants 3 years	1.360*** (0.142)	1.180 (0.353)	1.034 (0.261)	0.771 (0.227)	1.302*** (0.168)
Immigrants 4 years	1.697*** (0.217)	1.181 (0.408)	1.256 (0.457)	0.951 (0.433)	1.577*** (0.240)
Immigrants 5 years	2.210*** (0.319)	1.814** (0.580)	1.695 (0.964)	0.934 (0.385)	1.620*** (0.279)

*Notes:* The values for the dependent variable range from 1 to 22 in the case of men and from 1 to 17 in the case of women. The smallest (highest) value is taken by that occupation or group of occupations with the lowest (highest) average gross hourly earnings in 2002. Estimations also include age, education, indicator for marital status and region dummies (52 province dummies). Standard errors are computed using White's variance estimator.

*Source:* Earnings Structure Survey (EES-02).

\*\*\* Signifies statistically different from zero at the 1% level or better; \*\* at the 5% level or better; \* at the 10% level or better.

exchange programmes, such as ERASMUS. A second finding worth noting is the overall lack of occupational assimilation among African men and women. In particular, African women have the lowest occupational attainment of all other immigrant groups upon arrival. As noted earlier in the paper, the slow labour market assimilation of African immigrants could be due to a variety of factors, ranging from skill transferability difficulties to discrimination. Finally, it is worth emphasizing the occupational assimilation of other immigrant groups, such as European immigrants from outside the EU15 block and, specifically, Latino immigrants. Both of these immigrant

groups show evidence of upward occupational mobility as their residency lengthens and they acquire Spanish specific skills.

*Occupational assimilation by educational attainment.* As noted earlier, immigrant occupational assimilation may vary according to their human capital. We display the estimated odds ratios for men's (top panel) and women's (bottom panel) occupational assimilation when they have primary and secondary schooling in Tables 10 and 11, respectively. Immigrants endowed with a lower educational attainment may take a longer time to assimilate to their native counterparts occupation-wise than more educated migrants. This appears to be the case when we compare the occupational assimilation of immigrants with a primary education (Table 10) to that of immigrants with a secondary education (Table 11). Specifically, male immigrants with a primary education are still 68 per cent less likely than similar natives to hold a higher ranked occupation (vs a higher ranked occupation) 5 years after migration (i.e.  $((0.281 * 1.135) - 1) = -0.681$ ). In contrast, their counterparts with a secondary education are just 51 per cent less likely than similar natives (i.e.  $((0.277 * 1.754) - 1) = -0.514$ ) to hold a higher ranked occupation after 5 years of residence in Spain. A similar result is observed when we compare the performance of male immigrants from non-EU15 countries or that of Latinos with a primary and a secondary education, respectively.

Yet, occupational assimilation seems to occur at a slower pace for more educated female immigrants relative to their less educated counterparts. Specifically, female immigrants with a primary education are 54 per cent (i.e.  $((0.316 * 1.46) - 1) = -0.539$ ) less likely than similar natives to hold a higher ranked occupation 5 years after migration. As such, they enjoy a higher occupational assimilation to similar natives than their female migrant counterparts with a secondary education who, 5 years after migration, still have a 67 per cent (i.e.  $((0.148 * 2.210) - 1) = -0.673$ ) lower likelihood of holding a higher ranked occupation than similar natives. Differences in the occupational assimilation of male and female immigrants by educational attainment could be, in part, due to existing gender differences in the schooling received back home and in the occupations immigrants hold in Spain.

*(c) Occupational assimilation or immigrant selection via return migration?*

Before concluding our discussion on the occupational assimilation of immigrants relative to similarly skilled natives, it is worth discussing the potential role played by return migration. Given the cross-sectional nature of the data, it is possible that the upward occupational mobility associated with longer residency in the host country is the byproduct of a positive immigrant selection taking place via return migration (Dustmann 1999, 2000). Yet, the potential role of return migration in biasing our assimilation estimates is uncertain for a couple of reasons. First, as of today, there is an ongoing debate in the literature as to the sign of the immigrant selection possibly taking place via return migration. On the one hand, it is often argued that successful immigrants are the ones choosing to stay in the host country (e.g.



Borjas 1989). However, in some instances, successful immigrants return to their home countries upon achieving a saving goal, as in the case with ‘target savers’ who migrate in order to make enough money to build a home in their home country or to retire (e.g. Berninghaus and Seifert-Vogt 1993). To the extent that both cases of immigrant selectivity may be taking place, various studies have been unable to conclude whether return migration results in a positively or negatively selected sample of host country stayers (Constant and Massey 2003; Hunt 2004). Nonetheless, because immigrants appear to be performing quite well after their arrival, they are unlikely to return to their home countries unless they are ‘target savers’. Therefore, we may, most likely, underestimate immigrant assimilation rates. Furthermore, our focus on relatively recent migrants with up to 5 years of residence diminishes the role of return migration. In sum, it remains unclear what role return migration may play in the assimilation estimates of recent immigrants in Spain.

## **6. Summary and conclusions**

This article provides a preliminary analysis of the assimilation of recent immigrant waves to the Spanish labour market in terms of their employment likelihood, occupational attainment and occupational upward mobility as their residency lengthens. We rely on data from the 2001 Population Census and on wage information from the 2002 Earnings Structure Survey. Several conclusions can be drawn from the analysis. First, immigrant men and women appear significantly less likely to be employed than similarly skilled natives. The employment gap varies by gender (from 15 per cent for men to 4 per cent for women) as well as by immigrants’ origin. In particular, immigrant men from non-EU15 countries have the largest employment gap with respect to similar natives, that is, in the order of 32 percentage points. In contrast, African immigrants are only 8 percentage points less likely to be employed than comparable natives. Among women, recent immigrants from the EU15 countries are 26 percentage points less likely to be employed than similar natives, whereas recently arrived Latino women are statistically more likely to be at work than similar natives. Differences in the employment assimilation of various immigrant groups can be due to a variety of factors. Specifically, immigrants from the EU15 countries may be more likely than other immigrant groups to come to Spain for purposes other than work, such as studying. Alternatively, some EU15 immigrants may have higher reservation wages if they originate from richer countries or if they enjoy a greater degree of skill transferability on account of similarities between the educational systems in the EU. In contrast, Africans may primarily migrate to work. They may also have lower reservation wages owing to greater earnings differentials between Spain and their home countries, or enjoy a lesser degree of skill transferability than their EU15 counterparts. At any rate, we find that immigrants’ employment likelihood varies by immigrant origin, with the employment gap closing at a faster rate for Latino men and EU15 women,

perhaps due to their Spanish proficiency and higher skill transferability, respectively.

Second, the occupational attainment of EU15 immigrants seems on a par with that achieved by similarly skilled natives. However, there exists evidence of an occupational attainment gap between other non-EU15, African and Latino immigrants and their native counterparts. The data also seem to support the notion of upward occupational mobility and assimilation on the part of non-EU15 and Latino immigrants as their Spanish residency lengthens. However, we find no clear pattern of occupational assimilation in the case of African immigrants, which could be linked to reasons of skill transferability, language proficiency and/or labour market discrimination. We also examine differences in the occupational assimilation patterns of immigrants depending on their educational attainment. Not surprisingly, we find that low educated male immigrants with less human capital experience a slower occupational assimilation process than their counterparts with a secondary education. However, this pattern is only observed in the case of male immigrants, suggesting the existence of gender differences in the educational and occupational attainment of immigrants and natives, possibly driving the different role played by education in explaining male and female immigrant assimilation.

From a policy perspective, the analysis reveals the need to pay close attention to immigrant groups having greater assimilation difficulties, as is the case with Africans, in order to prevent marginalization and subsequent social tensions (e.g. recent immigrant riots in France). The offering of training programmes that allow these immigrants to more easily transfer their human capital and acquire Spanish specific skills possibly sought by employers could prove useful in facilitating their adaptation.

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### **Notes**

1. Figure 1 refers to the stock of immigrants with residence permits in each of the plotted years.
2. Adding those immigrants who arrived during the first half of the 1990s would only increase the fraction of overall immigrants by 12 percentage points.
3. It is worth noting that the direction of the biases caused by return migration is not always obvious. On the one hand, it is possible that migrants who experience hardships upon arrival to the host country are the ones returning home. Alternatively, it may be the case that these migrants are the ones encountering a greater

- difficulty to return to their distant countries. As such, they are the ones to stay longer relative to more successful migrants who may choose to go back to their countries after successfully working and saving enough money in the host country.
4. While the Census contains individual-level data on the occupation held by each worker, it lacks information on their wages. The latter would have to be imputed from the Spanish Earnings Structure Survey after averaging out wages for workers within each occupational category. Because using the imputed aggregate wage information would introduce considerable measurement bias into our dependent variable, we instead devise an occupational ranking used to assign each individual in the Census a number according to his/her occupation. This ranking becomes our dependent variable and is intended to be indicative of how each individual's occupation is ranked using average earnings instead of the earnings of that particular individual.
  5. The Census question regarding the educational attainment of individuals 10 years of age and older is phrased as follows: 'What is the highest grade you have completed?'
  6. The Census question regarding immigrants' nationality is simply labelled 'Nationality' and gives respondents various choices, including Spanish, Spanish and other (allowing them to identify up to two more countries), or foreign nationality (allowing them to identify up to two countries).
  7. The likelihood-ratio (LR) test that compares the male and female estimates for equation (2) is given by: LR Chi-square (65) = 101,058.45 with a corresponding  $\text{Prob} > \text{Chi-square} = 0.0000$ .
  8. Results from the likelihood-ratio tests suggest that a joint regression is preferable to separate regressions using data from all natives and immigrants from a specific origin.
  9. Bundling is always done with the next higher ranked occupational category.
  10. Similar graphs showing the occupational distribution of all men and women with varying educational attainment show that assimilation takes place at a slower pace for less educated immigrants than for their more educated counterparts. These figures are available from the authors upon request.
  11. We examine the appropriateness of a joint estimation versus separate estimations by natives and immigrants' educational levels. The likelihood-ratio test gives the following statistic: Chi-square (160) = 247319.28 with  $\text{Prob} > \text{Chi-square} = 0.0000$ . Therefore, we proceed to estimate the model separately by educational attainment.
  12. Because of the small sample sizes, we are unable to carry out the regression analysis for male and female immigrants with a university degree.

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