"Job loss among immigrant and native workers: evidence from Spain's economic downturn"

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Abstract

The profound crisis that has affected the Spanish economy since mid-2008 has been characterized by significant job losses and a marked rise in the country´s unemployment rate. However, unemployment has had a differential impact on different population groups. Compared to native, immigrant workers have experienced higher rates of job loss. Against this backdrop, this paper examines the differences between immigrants and natives (distinguished by gender) in terms of their probability of suffering job loss in the downturn of late 2008 and 2009. Our results indicate that the higher rate of job loss among female immigrant workers can be fully explained by their lower endowment of human capital. By contrast, human capital endowment and over-representation in certain occupations, sectors and regions in which the crisis had greatest impact do not appear to be the only reason for the penalty suffered by immigrant males in terms of their chances of losing their job in the downturn.

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1. INTRODUCTION

The Spanish economy received a high influx of immigrants in the period of economic expansion that stretched from the mid-90s to the outbreak of the current crisis in the second half of 2008. The country's active population that had stood at slightly more than 12 million in 1994 grew to about 20 million in 2008. In these years, Spain's immigrant population grew from just over 2% in 1996 (around half a million people) to reach about 12% in 2009 (more than five million people). As Silva and Vázquez-Greno (2011) calculate, this meant an average net inflow of 500,000 immigrants a year, peaking at around 920,000 in 2007. Indeed, half of the ten million immigrants settling in the EU between 1998 and 2008 chose Spain as their destination, leaving Spain second only to Germany (with around seven million immigrants) in the ranking of EU Member States in terms of absolute number of foreigners. Thus, in a very short period of time, immigration in Spain reached levels similar to those recorded in other countries, the difference being that the latter had had much more experience in handling these processes, having received immigrants over various decades.

Most of the increase in the stock of immigrants was attributable to the influx of *economic* immigrants, largely from developing countries. At a date immediately prior to the current crisis, these immigrants represented roughly 80% of all foreigners in Spain. As in the rest of the EU, the migratory flows occurred in two main directions: from South to North (principally from North and sub-Saharan Africa), and from East to West (from the countries of Central and Eastern Europe and from the republics of the former Soviet Union). However, in the specific case of Spain, we need to add another flow, that from Latin America, given the region's strong cultural and historical ties with the host country.

Several studies have examined the impact of immigrants on the native-born and on host country labour markets (e.g., Card and DiNardo 2000; Borjas 2001; Ottaviano and Peri 2012). However, there would appear to be a broad consensus that the foreign-born have only a minor effect (if indeed any) on native labour market conditions. Thus, immigration appears to have a moderate negative effect on the wages of low-skilled native workers, while its impact on unemployment rates seems to be very small. A second line of studies has examined the relative labour market performance of

immigrants, concluding that the foreign-born have to undergo a lengthy process of assimilation, in terms of wages and employment status that, in most instances, is rarely completed (e.g., Husted et al. 2001; Price 2001; Schmitt and Wadsworth 2007). In the specific case of labour market status, the differences observed between immigrants and natives in their transitions to and from unemployment can be explained by the formers' inferior human capital and, particularly, by their over-representation in occupations and sectors that are more sensitive to the business cycle (e.g., Kogan 2004; Fullin and Reyneri 2011; Fullin 2011). Indeed, immigrants are more likely to be hired by means of a fixed-term contract. This is in line with the expectation that, in a segmented labour market, the allocation of immigrants in the secondary market is the main reason for the higher lay-off rates that they face.

Spain's immigration boom has been the focus of several studies that have sought to examine its impact on the labour market. Those analysing the process of immigrant labour market assimilation report some assimilation in terms of the employment and unemployment rates of natives and immigrants after a certain period of residence, estimated to be about five years (Amuedo-Dorantes and De la Rica 2007; Fernández and Ortega 2008; Silva and Vázquez-Grenno 2011). However, these studies, like those that address other issues related to the impact of immigration on Spain's labour market, have tended to examine the phenomenon only during the expansion of the Spanish economy. This, obviously, can be explained by the paucity of immigration in Spain in times of previous economic downturns.

Paggiaro (2013) stresses that research examining the effect of downturns on the labour market performance of immigrants is still scarce. Brown and Pagan (1998) showed that the impact of the 1990-91 recession on employment status differed for blacks, Hispanics and other demographic groups in the US. Their evidence also points to gender differences within groups in the recession-induced labour market changes. Boisjoly and Duncan (1994) conducted a similar analysis, focused specifically on Hispanics, who, as they stress, were the main losers in the recession of the early nineties. They concluded that demographic differences, such as lower schooling levels, account for most of the differences, while the occupations and industries in which immigrants work place them in an especially vulnerable position. Dustmann et al. (2010) drew on data from the seventies to the early nineties for the UK and Germany to

analyse differences between immigrants and natives in employment and wages over the business cycle. Their results point to significantly larger responses of unemployment to economic shocks in the case of immigrants, but they found almost no differences in wage responses. This immigrant-native gap in unemployment responses remains even when conditioning for education, age, and geographic location.

The most recent studies have sought to provide evidence of the effect of the current recession, although most of this remains descriptive. The OECD (2010, 2011, 2012) has shown that immigrants are hit hardest by the recession in terms of employment and unemployment rates, particularly in the case of male workers that are over-represented in sectors that suffer the worst of the downturn (e.g., construction and related manufacturing sectors). In turn, the impact on female immigrants has not been so marked, as their employment is concentrated in sectors that have not suffered the consequence of the economic downturn so notably (e.g., domestic and social services). Gender differences in immigrants' employment responses to the current recession in Spain have been analysed in detail by Muñoz (2012). He shows that job losses for female immigrants since the beginning of the crisis have been much lower than those among male immigrants. Yet, job losses are negatively associated with educational attainment for both male and female immigrants, whereas this association is negligible for female natives.

Gender differences have also been reported in the case of Italy by Paggiaro (2013). Job separation rates in Italy increased in 2009 for all male workers, though the impact was more marked for immigrants. By contrast, immigrant and native female workers showed a slightly lower probability of losing their jobs, with the difference in their respective rates remaining the same before and after the downturn. Applying propensity score methods, the author shows that male immigrant employment rates suffer the impact of the recession more markedly because the observable characteristics of these workers are more closely associated with losing a job. When comparing similar workers, immigrant status is found to have no impact on the probability of job loss, which leads the author to conclude that there does not seem to be any kind of discrimination against immigrants in the Italian labour market.

The impact of the current crisis (beginning mid-2008) on the Spanish economy is an ideal scenario for assessing the response in terms of employment of immigrant workers and, especially, for comparing the impact of the crisis on the employment rates of native workers. A simple inspection of the data provided by the Labour Force Survey (LFS) shows that job losses since the start of the crisis have not affected all groups of workers in a homogenous manner. Specifically, the employment figures show that immigrants have suffered the consequences more than natives. It is this difference in the job loss rates of natives and immigrants in the period of crisis that motivates our analysis in this paper.[1]

In short, the question we pose is whether a native and an immigrant worker with otherwise similar characteristics showed the same chances of losing their job or if, on the contrary, immigrants were hit harder by the crisis in the labour market. We would expect job losses to be greater among immigrants if they were less productive due, for example, to their lower human capital endowment, and/or because they were employed in occupations and activities more sensitive to the business cycle. But it might be the case that among individuals endowed with similar characteristics and working in similar jobs and firms, the job loss rate was still greater for immigrants than it was for natives. In this case, the evidence would point to the fact that, facing the need to reduce their workforce as a result of the recession, companies opted to fire immigrant workers first simply because of their status as foreigners, which would reveal a form of discrimination against this group. However, as Kogan (2004) stresses, as it is impossible to control for all variables affecting the likelihood of an individual losing their job, we should speak rather in terms of immigrant penalties, meaning that *the residual effect of immigrant group membership may result from sources other than differential treatment by employers.*

The empirical analysis conducted in this paper exploits the micro-data provided by the LFS in the early years of the current economic crisis in Spain, when the impact of the downturn on job losses was especially abrupt and intense. A descriptive analysis confirms, on the one hand, the higher rate of job loss suffered by immigrants, and one that increased with the crisis, and, on the other, that immigrant workers had a lower

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[1] A general description of transitions in the Spanish labour market in the period immediately prior to the current crisis is provided in Silva and Vázquez-Grenno (2013).

endowment of human capital than that of native workers. In addition, the data show that immigrants were more frequently employed in jobs in the secondary labour market. Our regression analysis shows that both human capital and allocation in a particular occupation, sector and region made a significant contribution to the probability of job loss. However, it also indicates that the contribution differed between immigrants and natives. For instance, whereas more schooling lowered the chances of job loss for natives, it did not have a significant effect for immigrants. Finally, the decomposition of the immigrant-native gap in the rate of job loss suggests that the lower human capital endowment and over-representation in certain occupations, sectors and regions only account for the higher rate for female immigrants. In the case of men, these factors only account for a portion of the observed gap.

The rest of the paper is organized as follows. Section 2 presents the database and the procedure used to construct the main variable in the analysis. It also includes a description of the job loss rate for immigrant and native-born workers in the period under analysis. In section 3, we compare the observed characteristics of the groups of immigrant and native workers. Specifically, we describe the endowment of human capital in each group and the distribution of immigrant and native workers across occupations, sectors and regions. The effect of immigration on the probability of job loss conditioned to the observed characteristics is estimated in section 4. This section also provides estimates of the effect of the observed characteristics for immigrants and natives separately. These estimates are used in section 5 to compute the decomposition of the immigrant-native gap in the rate of job loss. Finally, section 6 concludes.

2. DATABASE AND VARIABLE UNDER ANALYSIS

In this study we drew on data included in the Spanish wave of the LFS for the period stretching from the first quarter of 2008 to the third quarter of 2009. This period was selected with the aim of comparing the probability of job loss immediately before the impact of the crisis was felt in the Spanish labour market (that is, in mid-2008) with the probability of becoming unemployed once the effects of the crisis had become quite marked (that is, from the last quarter of 2008 onwards). The LFS, produced by the Spanish National Office for Statistics (INE), provides information about the personal characteristics of individuals as well as about the jobs and firms in which they are

employed. Additionally, the survey includes information that allows immigrants to be identified by their country of origin, irrespective of their legal status in Spain. This means our sample should represent both legal and illegal immigrants. Thus, despite the limitations of this database – presumably underestimating the total number of immigrants – it is arguably the most appropriate for the analysis we propose undertaking here.[2]

The sample includes individuals between the ages of 20 and 49 living in Spain (with the exception of Ceuta and Melilla - two Spanish city regions in North Africa), whose main occupation was not that of the military, business management, or public administration, and who were not in possession of dual nationality.[3,4] Since our focus in this paper is on immigrants from developing regions of the world (countries with per capita incomes considerably below that of Spain), foreign nationals from North America, Oceania and the other EU-15 Member States were excluded from the sample.

Our interest lies in determining the probability of an individual in our sample losing their job in a given quarter. This requires building labour market transitions (i.e. from employment to a different labour market status) by linking the information contained in the immigrants' responses to the questions on the LFS questionnaire.[5] We take as our point of reference a given quarter of the LFS (quarter t), and classify individuals as employed or unemployed according to their labour market status. Individuals are assumed to have remained in employment throughout the quarter if declaring themselves employed at time t they record a length of service of more than three months. By contrast, individuals are assumed to have been made unemployed during the quarter if declaring themselves unemployed at time t, the time elapsed since their last job indicates that job loss occurred no later than the previous quarter. To be included in

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[2] See Pérez-Infante (2006) for further details of the limitations of the LFS with respect to the immigrant population.

[3] As is usual in such studies, the sample was restricted to individuals older than 19 and younger than 50 years of age so as to homogenize the groups, given that the immigrant population outside these age limits was quite limited in the period studied.

[4] Given their specific characteristics, and to ensure consistency, these occupations were excluded from the analysis.

[5] An alternative would have been to use the continuous LFS. However, this database has two major drawbacks for the type of analysis we seek to conduct here: first, it does not identify immigrants from developing countries, distinguishing merely between the native and foreign-born; and, second, the sample is much smaller, the number of immigrants included in each quarter being quite limited, and so it suffers from problems of statistical significance.

the category of the unemployed, the individual must satisfy two requirements: i) they must have been a wage earner, and ii) must not have quit their job voluntarily.[6] Thus, we consider that the individuals that lost their jobs were those that were employed in quarter *t-1* but not in quarter *t*, either because they were unemployed, affected by an *expediente de regulación de empleo* (a lay-off plan, known in Spain as an ERE), or looking for a job but did not satisfy all the conditions to be officially classified as unemployed.

Thus, we can define a binary variable, *job loss*, which is equal to 1 if the individual lost their job during the quarter – their labour market status changing from being in employment at time *t-1* to being unemployed at time *t*, and 0 otherwise, i.e. the individual was employed at *t-1* and *t*.[7] We used the *job loss* variable for the sample of individuals in each quarter to compute the corresponding lay-off rate, i.e., the number of workers that lost their job in the quarter over the total number of workers. The rate was calculated both for the immigrant workers and for the native workers. As discussed above, the lay-off rates for men and women in general and, in particular, for immigrants of either sex, often differ. To account for these potential differences in the Spanish economy during the downturn, we calculated the job-loss rates for men and women, both native and foreign-born.

The rates of job loss (the separation rate) for native and immigrant workers distinguishing by gender, in the quarters under analysis for 2008 and 2009, are shown in Table 1.[8] In the period immediately prior to the outbreak of the crisis (the first quarter of 2008), the lay-off rate for immigrant males was more than twice that for native males, this gap being somewhat narrower in the case of female workers. From the third quarter of 2008, the impact of the crisis in Spain's labour market saw a rise in the job separation rate, although these effects were far from homogeneous across the groups under analysis. Thus, in the case of native male workers, the rate rose from 5.6% in the first

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[6] Our study seeks to determine whether, when laying off workers, employers opt to eliminate jobs occupied by immigrants first. For this reason, the self-employed and voluntary layoffs were not included in the category of workers that had lost their jobs.

[7] Individuals who changed jobs during a quarter are not classified as job losers, given that we are interested in the transition from employment to unemployment.

[8] For reasons of space, we include results only for the first and third quarters of 2008 and 2009. All other results are available upon request. The same applies to the tables in the sections that follow.

quarter of 2008 to a peak of 8.9% in the first quarter of 2009. In the case of immigrant males, the change in the rate was more intense, rising from 11.3% in the first quarter of 2008 to 24.6% in the first quarter of 2009. The immigrant-native gap for males thus increased markedly as a result of the effect of the crisis; however, the figures for the third quarter of 2009 suggest that it had started to narrow again following the initial impact of the downturn.

Interestingly, the pattern presented by native and immigrant female workers differs from that of their male counterparts. In the first quarter of 2008 the job separation rates stood at 6.9% and 11.6% for native and immigrant women, respectively, rising to 8.3% in the first quarter of 2009 for native females (lower than the rate recorded by native males) and to 12.8% for immigrant females. This confirms that the effect of the crisis was more pronounced on the employment status of male workers and, more especially, that the crisis had very little influence on the lay-off rate among female immigrants. Thus, during the crisis, the immigrant-native gap only increased in the case of males, while the gender gap largely disappeared for native workers, it increased substantially in the case of immigrants.

Overall, the results presented in Table 1 regarding the job loss rates for native and immigrant workers in Spain immediately prior to and during the initial period of economic downturn are in line with the evidence documented elsewhere (and summarised in the introduction) for other developed economies and for Spain in the period of massive immigration prior to the crisis. In brief, the lay-off rate was higher for immigrants and increased as the crisis progressed, above all for male immigrant workers. In the sections that follow we seek to verify if the workers' human capital endowment (specifically as regards levels of educational attainment), and over-representation in certain occupations, industries and regions account for the immigrant-native gap for males and the fact that female immigrants were not as heavily penalized as their male counterparts.

3. DIFFERENCES IN HUMAN CAPITAL AND EMPLOYMENT SEGREGATION.

The first step in this analysis of the gap in the job loss rate is to describe the observable characteristics of immigrant and native workers (distinguished by gender) in the period under review. Table 2 shows the distribution of individuals from the sample by category – age, educational attainment, occupation, sector and region. It also includes the number of years of schooling for each group of workers as a summary measure of the level of education. It is expected *a priori* that immigrants will have been endowed with characteristics (including lower human capital and greater presence in occupations and industries that are more sensitive to economic downturn) that make them more prone to losing their jobs. The information in Table 2 confirms this expectation. Furthermore, the share of immigrant workers in age groups below 40 is greater than that of natives (both in the case of men and women), whereas the share is smaller than that of natives in the 40 to 49-year-old group. Assuming the usual association between age and labour market experience, these figures suggest that immigrants had less experience than natives.

There is also a smaller percentage of immigrants represented in the highest schooling levels. While the share of native workers with higher education (both first and second levels) was about 35 and 47% for men and women respectively, the figures for immigrants were much lower (between 15 and 18% for men and 20% for women). By contrast, around 25% of immigrant male and between 15 and 20% of immigrant female workers reported having primary education or less. The corresponding share for natives was around 8% for men and 5% for women. Thus, the average number of years of schooling for immigrants was between 1.5 and 2 years fewer than that for natives, which is a substantial disparity. In short, immigrants were less experienced and less educated than their native counterparts, which in principle made them less productive and, therefore, more likely to be affected by job layoffs when the crisis started to take effect, ushering in a period of massive job losses.

Besides differences in the observed endowment of human capital, immigrants and natives also differed in terms of the occupations and sectors of activity in which they were predominantly employed. Table 2 shows that immigrant male workers were over-represented in the agriculture, manufacturing and construction sectors, and in elementary occupations, whereas they were clearly under-represented in the more

skilled occupations (technicians and professionals; accountants, administrative and other office employees; and to a lesser extent, installation and machinery operators). As for female immigrants, they were more intensively employed in unskilled occupations such as those in the catering and sales sectors, and in elementary occupations. As in the case of males, the share of native female workers in skilled occupations was much higher than that of immigrant females. Broadly speaking, the figures in Table 2 show that around 80% of male immigrants and 85% of female immigrants were employed in low skilled occupations. The share of native workers in these occupations was much lower (48 and 40% of males and females, respectively).

Distribution by sector also reveals substantial differences between immigrant and native workers. Immigrant male workers were over-represented in primary sector activities, especially, in the construction sector. Immediately prior to the outbreak of the crisis, 44% of immigrant males worked in this sector. This share fell to 32% in the third quarter of 2009 as a result of the elimination of construction jobs. Yet, the share of immigrant male workers in the sector was twice that of native males in that period. As for female immigrants, they were over-represented in the retail and hospitality sector and in other social services, including personal and household services. It should be stressed that, in contrast with the decrease in the share of male immigrants in the construction sector over this period, there was no significant variation in the share of female immigrants in the two sectors that concentrated most of the employment for this population group. This points to the fact that the crisis had less of an impact on female than it did on male immigrant employment.

Finally, we should note the geographical distribution of immigrants, who tended to concentrate in certain regions, which means there was no perfect correspondence with the spatial distribution of natives. As shown in Table 2, immigrants were over-represented in the economically dynamic regions along the Mediterranean coast (Catalonia, Valencia, and Murcia) and in Madrid. By contrast, in relation with the size of the native population, their presence was lower in traditionally less economically advanced regions including Andalusia, Extremadura, Castile-Leon and Galicia. Interestingly, immigrants were also under-represented in the Basque Country, which is one of the most advanced regional economies in Spain. The specialization of the Basque economy in sectors and occupations that demand skilled and specialized labour, and the

much lower size of the construction sector could account for the lower relative size of the immigrant working population in that region. Regional differences in the initial impact of the crisis, and the aforementioned features of the spatial distribution of immigration, could also explain some of the differences in the probability of job loss between natives and immigrants.

Summing up, a simple comparison of the description of the characteristics of immigrants and natives in the sample confirms that substantial differences between the two groups existed. In fact, figures indicate that immigrants possessed a lower endowment of human capital and were employed in occupations, industries and even regions that were more sensitive to the destruction of employment when the crisis began to hit the Spanish economy. However, this comparison does not allow us to conclude that the difference in the job loss rate between immigrants and natives (and correspondingly in the individual probability of job loss between the two groups) can be attributed to differences in the observable characteristics.

Indeed, another simple analysis provides evidence that this may not in fact have been the case, at least for male workers. Table 3 shows the job loss rate for each of the categories of the main characteristics observed in immigrants and natives. If the immigrant-native gap was caused by differences between immigrant and native worker human capital and by their occupational, sectoral and spatial segregation, we would not observe significant differences in the rate of job loss for the subpopulations of each category with regard to these characteristics. The results show that, with the exception of the youngest and the least educated male workers, the rate was higher for immigrants for all categories of the variables proxying for workers' human capital (age and educational attainment). However, and above all at the end of the period under analysis, the differences between immigrant and native females for each category were negligible, and in some cases they actually favoured the immigrants. Broadly speaking, a similar pattern is observed for the differences in the rate within occupations and within sectors of activity. With few exceptions, the rate was higher for immigrant males in each occupation and sector, but this penalty does not seem to exist in the case of immigrant women once the occupational and the sectoral distribution is accounted for.

The descriptive results in Table 3 therefore suggest that most of the gap observed for female workers can be explained by the lower endowment of human capital of immigrants and by segregation in certain occupations and sectors. In sharp contrast, the evidence reported above indicates that none of these characteristics on their own account for the gap observed for male workers. However, it might be the case that the difference between natives and immigrants was caused by the simultaneous effect of several characteristics. The analysis therefore needs to consider all the characteristics together, that is, it should compute the magnitude of the gap conditioning on all observable characteristics simultaneously. In the next section we present the methodology to perform this type of analysis, and the results of its application.

4. IMPACT OF HUMAN CAPITAL AND JOB CHARACTERISTICS ON JOB LOSS.

This section analyses in detail the difference in the probability of job loss between natives and immigrants conditional on the observed endowment of human capital and on the set of job characteristics. To do this, we present the specification used to approximate the probability of job loss in the entire sample and separately for natives and immigrants.[9] We then describe the results of the estimation of the immigrant-native gap conditional on the observed characteristics, and the differences between immigrant and native workers as regards the effect of the characteristics on the probability of job loss.

4.1. Empirical model

We start from the latent variable emp^* which captures the individual's propensity to be employed:

$$emp^* = Z\gamma + \mu, \qquad \mu \sim N(0,1) \tag{1}$$

where Z represents a set of observable characteristics, γ is the coefficient vector, and μ the error term that is distributed as a standard normal. The result of the process in

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[9] For the sake of convenience when interpreting the results, the model is specified for the probability of job loss. Symmetrical results are obtained when the likelihood of staying in employment is the event being analysed.

equation (1), emp^*, is unobservable in practice. We can only observe whether the individual was or was not employed. Thus, we define the indicator emp that takes a value of 1 if the latent variable is positive, and 0 otherwise:

$$emp = 1(emp^* > 0) = 1(Z\gamma + \mu > 0) \tag{2}$$

$$emp = 0(emp^* \leq 0) = 0(Z\gamma + \mu \leq 0) \tag{3}$$

In turn, those who were employed ($emp^* > 0$) either kept their jobs or lost them during the corresponding quarter. So, we define $job-loss^*$ as a latent unobservable variable for the individual's probability of job loss by:

$$job-loss^* = X\beta + \varepsilon, \qquad \varepsilon \sim N(0,1) \tag{4}$$

where X contains the set of observable characteristics related to the likelihood of an individual losing or keeping their job, β is the parameter vector that captures the effect of these variables and ε is the error term with a standard normal distribution. Although $job-loss^*$ is not observable, we can use the indicator $job\ loss$, described in section 2, to determine whether each individual in the sample kept their job during the corresponding quarter or, conversely, whether they lost it. Therefore, the link between $job\ loss^*$ and $job\ loss$ is given by:

$$job-loss = 1(job-loss^* > 0) = 1(X\beta + \varepsilon > 0) \tag{5}$$

$$job-loss = 0(job-loss^* \leq 0) = 0(X\beta + \varepsilon \leq 0) \tag{6}$$

Assuming $corr(\mu, \varepsilon) = 0$, a consistent estimate of the parameters of the process associated with the probability of job loss in (4) can be obtained through a univariate probit model for the event of job loss versus staying in work, using the set of observable characteristics of workers and jobs:

$$prob(job-loss = 1) = \Phi_u(X\beta) \tag{7}$$

where $prob(job-loss = 1)$ represents the probability of job loss, and Φ_u denotes the cumulative distribution function of the univariate standard normal.

But in the case where $corr(\mu, \varepsilon) = \rho \neq 0$, then $(\mu, \varepsilon) \sim N_b(0,0,1,1,\rho)$, so that estimates based on (7) will not guarantee the consistency of the estimation of the parameters of interest. The correlation between the error terms might be caused by unobservable factors (e.g., an individual's innate ability) that simultaneously affect the probability of being employed and the probability of job loss. A consistent estimate of the coefficients in such a framework can be obtained by estimating the Heckman probit model by maximum likelihood.[10]

Since we only observe whether an individual lost or kept their job in the case of those that were employed, the scenario of our analysis is one of sample selection, in which individuals in the sample found themselves in one of three possible situations: i) the individual was not employed, ii) the individual was employed and kept their job and, iii) the individual was employed but lost their job during the quarter.

Therefore, the joint probability of being employed and losing one's job during the quarter is:

$$prob\big(emp = 1, job - loss = 1\big) = \Phi_b(X\beta, Z\gamma, \rho) \tag{8}$$

where Φ_b is the cumulative distribution function of the bivariate normal. The matrix of characteristics Z may contain any or all the variables in X, although to prevent the identification of the parameter estimates being based solely on the nonlinearity of the functional form, at least one of the variables included in Z, which determines the probability of being employed, has to be excluded from X, which means that it is assumed not to exert a direct effect on the probability of job loss. We use various household characteristics available in the LFS as the variables included in Z but not in X such as marital status, living with spouse, number of household members, number of children, and presence of children under the age of 10 in the household. As such, these are assumed to affect the individual's incentive to participate in the labour market and to actually have a job, through the effect on the opportunity cost. However, it is our belief that they do not impact the employer's decision to dismiss a worker once they are

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[10] See for instance, Cameron and Trivedi (2005). We used the *heckprob* command in Stata to obtain the estimates.

in employment. This we assume to depend solely on the worker's relative level of productivity and the firm's particular situation.[11]

The probability of loss of employment conditional on being employed is obtained through the joint probability of being employed and job loss, and the probability of being employed, as:

$$prob(job-loss=1 \mid emp=1) = \frac{prob(emp=1, job-loss=1)}{prob(emp=1)} = \frac{\Phi_b(X\beta, Z\gamma, \rho)}{\Phi_u(Z\gamma)} \qquad (9)$$

The impact of the characteristics on the conditional probability is informative of their effect on the probability of job loss for the employed. We measured this impact by computing the conditional marginal effect for each variable from the estimate of the Heckman probit model.

4.2. Results

Our estimates of the marginal effect associated with a dummy variable equal to 1 if the worker is an immigrant and 0 if the worker is a native are shown in Table 4. A marginal effect of immigration was also estimated for men and women separately. First, in Model 1, we show the marginal effect estimated when only the immigrant dummy is included in the model, that is, when the effects of differences in human capital and segregation are not accounted for. In the subsequent column in Table 4 we show the estimate of the effect of immigration when conditioning for differences in human capital endowments (Model 2), and for differences in human capital and occupational, sectoral, and regional segregation (Model 3).

The estimate of the marginal effect in Model 1 for male and female workers in each of the quarters under analysis resembles the gap in the rate of job loss between immigrants and natives discussed in section 2. The inclusion of the human capital variables (Model 2) leads to a fall in the estimate of the marginal effect of being an immigrant, that is, in the estimated gap for immigrants and natives with similar human capital. In fact, in the case of women, the marginal effect is only statistically different from zero in the quarter

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[11] Unfortunately, to the best of our knowledge, it is not possible to check compliance with these assumptions from an empirical point of view. In any case, it should be stressed that similar results were obtained when the identification was based exclusively on the non-linearity of the functional form, that is to say, when all the variables in Z were also included in X.

preceding the crisis (first quarter of 2008). For male workers, differences in human capital do not explain the entire gap, but they still account for between a third and a quarter, depending on the specific quarter of the year under analysis. The estimated marginal effect for males falls further when the segregation variables are included (Model 3). The estimate of the immigrant-native gap in the first three quarters under analysis is about half that obtained when not conditioning for the observable characteristics, and about a third in the last quarter. Still, it remains statistically different from zero in all cases. As for females, the results from the full model are similar to those obtained when controlling for human capital only.

Summing up, as reported in previous studies for other economies, the differences between immigrant and native-born workers in human capital and the over-representation of the former in certain occupations, sectors and regions account for a large share of the gap in the rate of job loss for men. This contribution is even greater in the case of women, as there is no evidence of immigrant penalization when comparisons are made with natives with similar human capital endowments. In any case, it might be argued that the analysis conducted so far imposes the same response in terms of the probability of job loss on the human capital variables and the other observed characteristics in the two groups of workers under analysis. Figures for the rate of job loss associated with different levels of educational attainment (see Table 3) call into question the similarity of the impact of education for immigrants and natives (a monotonic decrease in the rate with level of education is only observed for natives). In one way or another, this same argument might be applied to the other observed characteristics.

To explore this issue further, we estimated the marginal effects of the observed characteristics for immigrants and natives separately. The results for the number of years of schooling, age, and occupation and sector of activity are summarised in Table 5.[12] In the case of both men and women, the coefficients of schooling, age, occupation, and sector are significantly different from zero immediately prior to and during the downturn for natives only. This means that, with just a few exceptions, there were no

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[12] For reasons of space, we do not present the results for the coefficients of the regions (but they are available upon request). On the other hand, similar results were obtained when dummies for the levels of educational attainment were included instead of the number of years of schooling.

significant differences in the probability of job loss between immigrants with different observed characteristics. By contrast, human capital and the type of job (in terms of occupation and sector) account for much of the variability in the probability for natives. In any case, the exceptions in the case of immigrants merit some comments. First, after the initial wave of job destruction in the third quarter of 2009, human capital seems to have exerted a significant effect in the case of female immigrants. For instance, each additional year of schooling reduced the probability of job loss in that quarter by 0.5 percentage points for that population group. Second, at the outbreak of the recession (third quarter of 2008), immigrant workers (both male and female) employed in certain occupations (the most highly skilled) were far less likely to lose their jobs. This suggests that the first wave of the crisis was particularly devastating for immigrant workers employed in unskilled occupations. Finally, estimates from the sample of immigrants confirm that being employed in the construction sector significantly increased their probability of being laid off once activity in this sector was brought to an abrupt halt with the bursting of the housing bubble.

These differences in the estimated effect of the observed worker and job characteristics on immigrant and native-born workers suggest that the interpretation of the coefficient of the dummy variable for immigrants in the specification pooling the samples of immigrants and natives might be flawed. Although this has been the common practice of studies analysing this issue in the literature to date, in the section that follows we propose an alternative methodology for determining if differences in the human capital of natives and immigrants and/or over-representation in some occupations, sectors and regions fully account for the gap in the rate of job loss between these two groups of workers.

5. DECOMPOSITION OF THE IMMIGRANT-NATIVE GAP IN THE RATE OF JOB LOSS.

In this section we use the estimates of the coefficients for immigrants and for natives, and the values of the observed characteristics in the two groups of workers, to decompose the immigrant-native gap in the average probability of job loss in two components: i) one associated with the differences between natives and immigrants in their respective endowment of the observed characteristics, and ii) the other associated

with the differences in the effects of these characteristics. The first of these components should account for most of this gap if it is mainly the result of the lower human capital of immigrants and their allocation in the secondary market. The second should make a significant contribution if similar workers (in terms of their observed characteristics) have different chances of being laid off; thus, pointing to either a form of discrimination against immigrants or the effect of unobservable characteristics penalizing them.

5.1. Methodology

We apply the generalization of the traditional decomposition of Oaxaca-Blinder (Oaxaca 1973; Blinder 1973) proposed in Yun (2004), since it provides a valid decomposition for non-linear functional forms having as their argument a linear combination of variables.

In the case of the probit model specified in (7), the decomposition, based on a consistent estimate of the parameters, can be written as:

$$\overline{\text{prob}(job-loss)_I} - \overline{\text{prob}(job-loss)_N} = \left[\overline{\Phi_u\left(X_N \hat{\beta}_N\right)} - \overline{\Phi_u\left(X_I \hat{\beta}_N\right)} \right] \\ + \left[\overline{\Phi_u\left(X_I \hat{\beta}_N\right)} - \overline{\Phi_u\left(X_I \hat{\beta}_I\right)} \right]$$

(10)

The term on the left of equation (10), $\overline{\text{prob}(job-loss)_I} - \overline{\text{prob}(job-loss)_N}$, corresponds to the gap between immigrants (I) and natives (N) in the average probability of job loss. This difference can be decomposed into the sum of two terms. The first term on the right side of the equation, $\left[\overline{\Phi_u\left(X_N \hat{\beta}_N\right)} - \overline{\Phi_u\left(X_I \hat{\beta}_N\right)} \right]$, reflects the effect attributable to differences in the observed characteristics, weighted by the coefficients of the native-born, since we assume this group was not penalized when rewarding the observed characteristics in the job loss process. In other words, this term will equal the gap in the probability of job loss if it was fully caused by differences between immigrants and natives in their human capital endowment and by the allocation of the former group in particular occupations, sectors and regions. Otherwise, it will indicate the share of the gap originated by these factors.

The second term, $\left[\overline{\Phi_u\left(X_I\hat{\beta}_N\right)} - \overline{\Phi_u\left(X_I\hat{\beta}_I\right)}\right]$, corresponds to the difference in the impact of the characteristics. It captures the part of the gap that cannot be explained by differences in the observed characteristics. As such, it may be interpreted as evidence of discrimination against immigrants, since it accounts for the difference in the probability of job loss for immigrants and natives with similar characteristics. In the absence of discrimination, this term equals zero.[13]

The overall decomposition in (10) does not allow us to isolate the contribution to the gap of, on the one hand, human capital and, on the other, the distribution of workers across occupations, sectors and regions. To overcome this drawback, we follow the proposal in Yun (2004) and use:

$$\overline{\text{prob}(job-loss)_I} - \overline{\text{prob}(job-loss)_N} =$$
$$\sum_{i=1}^{k} P_{\Delta X}^{i}\left[\Phi_u\left(\overline{X}_N\hat{\beta}_N\right) - \Phi_u\left(\overline{X}_I\hat{\beta}_N\right)\right] + \sum_{i=1}^{k} P_{\Delta\beta}^{i}\left[\Phi_u\left(\overline{X}_I\hat{\beta}_N\right) - \Phi_u\left(\overline{X}_I\hat{\beta}_I\right)\right] = \tag{11}$$
$$\sum_{i=1}^{k} P_{\Delta X}^{i}\left[\Phi_u\left((\overline{X}_N - \overline{X}_I)\hat{\beta}_N\right)\right] + \sum_{i=1}^{k} P_{\Delta\beta}^{i}\left[\Phi_u\left(\overline{X}_I(\hat{\beta}_N - \hat{\beta}_I)\right)\right]$$

where: $P_{\Delta X}^{i} = \dfrac{\left(\overline{X}_N^i - \overline{X}_I^i\right)\hat{\beta}_N^i}{\left(\overline{X}_N - \overline{X}_I\right)\hat{\beta}_N}, \quad P_{\Delta\beta}^{i} = \dfrac{\overline{X}_I^i\left(\hat{\beta}_N^i - \hat{\beta}_I^i\right)}{\overline{X}_I\left(\hat{\beta}_N - \hat{\beta}_I\right)}, \quad \sum_{i=1}^{k} P_{\Delta X}^{i} = \sum_{i=1}^{k} P_{\Delta\beta}^{i} = 1$.

$P_{\Delta X}^{i}$ and $P_{\Delta\beta}^{i}$ denote, respectively, the weights that allow us to distribute the total contribution of differences in the endowment and in the impact among each of the observed characteristics.

Our estimates of the effect of the observed characteristics on the probability of a worker losing their job in the previous section were obtained from the Heckman probit model. However, it is not possible to obtain the detailed decomposition in equation (11) from a specification that controls for sample selection. To overcome this drawback, we implemented the decomposition using the estimate of the coefficients in equations (10)

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[13] However, note that the omission of relevant characteristics for the probability of job loss in the empirical model would cause the second term to differ from zero, even in the absence of discrimination. Consequently, as is usual in exercises of this type, the results are contingent on the proper specification of the empirical model and, in any case, the interpretation of this component should include the effect of differences in the unobserved characteristics.

and (11) from the Heckman probit model.[14] A final methodological issue worth mentioning is the treatment of the various dummy variables included in the model. The inclusion of categorical variables related to the observed characteristics makes it difficult to quantify their effects on the decomposition. The usual estimation process, based on the exclusion of a category to avoid the so-called *dummy variable trap* (which normally poses no problem), represents a serious dysfunction in applying the decomposition techniques required for the study of discrimination. In order to avoid this problem we used the identification restriction proposed in Gardeazabal and Ugidos (2004) to estimate the coefficients to be used when computing the decomposition. This restriction allows us to obtain estimates of the effects attributable to each category that are robust to the excluded category.

5.2. Results.

The results of the decomposition for men and women are summarised in Table 6. First, we show those for the overall decomposition, that is, the part of the gap attributable to differences between immigrants and natives in all the observed characteristics (Explained), and that corresponding to differences in the coefficients (Unexplained). We then show the results for the detailed decomposition identifying the contribution of human capital and that attributable to differences in the occupational, sectoral and regional allocation (labelled as segregation in Table 6).

In the case of male workers, differences in characteristics accounted for 60% (3.48 out of 5.72 percentage points) of the gap in the first quarter of 2008. The contribution explained by the observed characteristics fell during the crisis, with a minimum being recorded in the first quarter of 2009 (35.6%), when the rate of job loss and the immigrant-native gap reached their highest values. These results thus confirm that the penalty suffered by immigrants (either attributable to some form of discrimination or the effect of some unobservable characteristics) increased during the downturn, making them more likely to lose their job in comparison with native-born workers. The detailed decomposition indicates that both differences in human capital between the two groups,

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[14] It is worth mentioning that, although the correlation between the error terms of the probability of being employed and of being laid off is statistically significant in most cases, the conclusions derived from the decomposition are similar when the coefficients used are those obtained from the estimation of a univariate probit for the probability of job loss.

and the segregation of immigrants in certain occupations, sectors and regions made a significant contribution to the gap. However, the part of the gap attributable to differences in human capital fell over the period under analysis from 44.2% (1.54 out of 3.48 percentage points) to 27.8% (2.14 out of 5.67 percentage points), whereas that associated with segregation rose from 55.8% to 62.2%. On the other hand, the detailed decomposition of the unexplained component shows that only differences in the impact of human capital played a significant role.

The results for female workers, shown in the lower panel of Table 6, confirm that most of the gap between immigrant and native-born women was caused by differences in the individual (human capital) and job (occupation, sector and region) characteristics. The unexplained component in this case is even not statistically significant, with the sole exception of that of the last quarter under analysis. Interestingly, the unexplained component is negative for the third quarter of 2009, which means that the differential effect of the observed characteristics favoured female immigrants, and thus reduced their risk of losing their job with respect to their native counterparts. The detailed decomposition reveals that such a feature is connected with the different impact of human capital (-1.98 percentage points) and, mostly, with that of segregation (-4.16 percentage points).

All in all, the decomposition of the immigrant-native gap in the rate of job loss confirms that the lower endowment of human capital of immigrant male workers, and the over-representation of this group in some occupations, sectors and regions account for only a part of the gap. Indeed, differences in observed characteristics do not account for the large increase in the gap during the crisis, particularly in the first quarter of 2009 when the rate of job loss peaked. In sharp contrast, the decomposition exercise for women confirms that there were no significant differences in the rate of job loss between immigrants and native-born workers with similar endowments of human capital and employed in the same occupations, sectors and regions.

5.3. Three years on …

Up to this juncture we have presented evidence solely for the period immediately prior to the crisis and during its early stages. However, it is of interest to know if any differences were recorded in the subsequent stages of the crisis or whether the same

pattern of behaviour was maintained.[15] Thus, in this section, we briefly discuss the magnitude of the gap in the probability of job loss between immigrants and natives in the first and third quarters of 2012, and the results of its decomposition. It should first be noted that, despite the impact of the crisis on the Spanish labour market, the size of the immigrant population remained virtually unchanged between 2009 and 2012. The crisis also continued to have a marked impact on the labour market, causing the unemployment rate to increase from about 18% in 2009 to 25% in 2012. The characteristics of both native and immigrant workers in 2012 are similar to those discussed in section 3 for 2009, with the notable exception of a fall in the level of education caused by the decline in the share of workers with the lowest education levels, and a substantial decrease in the percentage of workers in the construction sector. In fact, it should be noted that the fall in the share of construction employment affected primarily male immigrants, who having accounted for 32.6% of workers in this sector in the third quarter of 2009, represented just 17.5% in the same quarter of 2012. In this same period, the decline in the share of male natives was just over 4 percentage points (14.8% to 10.4%).[16]

In order to determine whether these and other minor changes in the characteristics of natives and immigrants affected the gap in the probability of job loss, Table 7 shows the results of the decomposition for the first and third quarters of 2012. The first two columns refer to male workers, while the last two contain information for female workers. It can be seen that the rate of job loss for immigrant males in 2012 remained at similar levels to those observed in the same quarters of 2009, while there was a slight increase in this rate for natives. Indeed, the gap in the first quarter of 2012 was 2 percentage points lower than in the same quarter of 2009, while the gap in relation to the third quarter was just over 1 percentage point. The decomposition results suggest that most of the gap can be explained by differences in human capital and, above all, by segregation in the subsequent phases of the crisis. In fact, in the third quarter of 2012, the unexplained component is not statistically significant.

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[15] We thank an anonymous referee for suggesting this extension of the analysis.
[16] The full set of results for the first and third quarters of 2012 are not included here for reasons of space, but are available from the authors upon request.

In the case of women, the gap between native and immigrant workers in 2012 remained stable at just over 2 percentage points, and only marginally significant. The contribution of the explained and unexplained components also remained stable at values similar to those observed in the third quarter of 2009. In other words, the lower human capital endowment and the segregation of immigrant women in certain occupations and sectors would have caused a greater differential in the rate of job loss than that actually observed. However, this effect was partially offset by the unexplained component. In the case of male workers, the contribution of segregation seems to be have been consolidated as the primary element accounting for the gap in job loss rate between immigrants and natives in this an advanced stage of a crisis that has afflicted the Spanish labour market now since late 2008.

6. CONCLUSION

This study has aimed to provide evidence of the impact of the current economic crisis on the employment of immigrants in Spain: specifically, whether they were more likely to lose their jobs than native workers at the beginning of the crisis, when the lay-off rate was highest. Although studies in other countries in previous recessions have analysed the differences between immigrants and natives in terms of their transition in and out of unemployment, it is our contention that the evidence reported here is interesting because of i) the massive inflow of immigrants in Spain in a very short period of time immediately prior to the marked economic downturn in late 2008; ii) the rapid and far-reaching adjustment undergone by the Spanish labour market in terms of quantities, given the rigidities that prevented wage adjustments; and iii) the bursting of the housing bubble and its impact on the construction sector, which provided employment for a high proportion of unskilled workers, including a large number of immigrants.

Using micro-data from the LFS for natives and immigrants, we have shown that the job loss rate was higher for immigrant male workers than it was for native-born males. Interestingly, this rate increased as the crisis took hold, but at a higher pace for immigrants, which supports our hypothesis that the incidence of the downturn was far from symmetric in these two groups of male workers. However, data for the rate of job loss among women reveal noteworthy differences. First, the increase in the rate attributable to the crisis was moderate both for immigrant and native female workers.

Indeed, the rate actually fell during some quarters of the study period for immigrants, resulting in a reduction in the respective gap between the two groups. All in all, the evidence leads us to conclude that the asymmetric effect of the crisis on immigrant and native employment caused a widening in the gap between male workers, and a reduction in that between women.

As for the origin of the gap in the job loss rate, we have shown that both human capital and being allocated in certain occupations, sectors and regions made a significant contribution to the probability of being made unemployed. But, unlike previous studies, we have provided evidence that suggests that this impact differed for immigrants and natives. Accordingly, the paper has proposed the application of a method to decompose the immigrant-native gap in the job-loss rate that accounts not only for the differences between the observed characteristics of immigrants and natives, but also for the differences in the contribution of these characteristics.

The results of this decomposition exercise allow us to conclude that the higher rates observed for immigrant male workers during the crisis were not attributable solely to the lower endowment of human capital and their over-representation in certain occupations, sectors and regions. Indeed, the portion of the gap that could be accounted for by these factors decreased over the period analysed; in other words, there were increasing differences in the probability of job loss between immigrant and native males with similar endowments of human capital, working in analogous occupations and sectors and in the same region. Among the plausible explanations for this is that immigrant workers suffered some kind of discrimination, whereby companies tended to dismiss immigrant rather than native workers of similar characteristics first. However, it should be borne in mind that these differences could be due to the effect of unobservable characteristics, and so it would be more accurate to speak of *immigrant penalties*. For instance, it might be the case that the education and experience obtained in different countries were not perfect substitutes. Indeed, the evidence indicates that the wage return to human capital acquired in the country of origin is lower than that acquired in the host country (e.g., Friedberg 2000; Sanromà et al. 2008). The imperfect transferability of human capital could also affect the propensity to lose one's job, provided this means that immigrant workers are less productive than native workers with similar observed levels of education and experience. Further research into this

issue requires longitudinal data representative of the native and immigrant working populations. This type of information would also allow us to study differences in the rate of finding employment, which is a question that has not been addressed in this study, although existing evidence suggests that there are significant disparities between natives and immigrants (e.g., Silva and Vázquez-Grenno 2011).

REFERENCES

Amuedo-Dorantes, C., & de la Rica, S. (2007). Labour market assimilation of recent immigrants in Spain. *British Journal of Industrial Relations*, 45, 257–284.

Blinder, A. S. (1973). Wage discrimination: reduced form and structural estimates. *The Journal of Human Resources*, 8, 436–455.

Boisjoly, J., & Duncan, G. J. (1994). Job losses among Hispanics in the recent recession. *Monthly Labor Review*, June, 16-23.

Borjas, G. J. (2001). Does immigration grease the wheels of the labor market? *Brookings Papers on Economic Activity*, 1, 69-119.

Brown, C. J. & Pagan, J. A. (1998). Changes in employment status across demographic groups during the 1990-1991 recession. *Applied Economics*, 30, 1571-1583.

Cameron, A. C. & Trivedi, P. K. (2005). *Microeconometrics: Methods and applications*. New York: Cambridge University Press.

Card, D. & DiNardo, J. E. (2000). Do immigrant inflows lead to native outflows? *American Economic Review*, 90, 360-373.

Dustmann, C., Glitz, A., & Vogel, T. (2010). Employment, wages, and the economic cycle: Differences between immigrants and natives. *European Economic Review*, 54, 1-17.

Fernández, C. & Ortega, C. (2008). Labor market assimilation of immigrants in Spain: employment at the expense of bad job-matches? *Spanish Economic Review*, 10, 83-107.

Friedberg, R. M. (2000). You can't take it with you? Immigrant assimilation and the portability of human capital. *Journal of Labor Economics*, 18, 221-251.

Fullin, G. (2011). Unemployment trap or high job turnover? Ethnic penalties and labour market transitions in Italy. *International Journal of Comparative Sociology*, 52, 284–305.

Fullin, G. and Reyneri, E. (2011). Low unemployment and bad jobs for new immigrants in Italy. *International Migration*, 49, 118-147.

Gardeazabal, J. & Ugidos, A. (2004). More on identification in detailed wage decompositions. *The Review of Economics and Statistics*, 86, 1034-1036.

Husted, L., Nielsen, H. S., Rosholm, M., & Smith, N. (2001). Employment and wage assimilation of male first-generation immigrants in Denmark. *International Journal of Manpower*, 22, 39-71.

Kogan, I. (2004). Last hired, first fired? The unemployment dynamics of male immigrants in Germany. *European Sociological Review*, 20, 445-461.

Muñoz, J. (2012). Evolución del empleo y del paro de las mujeres inmigrantes en el mercado de trabajo español. El impacto de la actual crisis económica. *Cuadernos de Relaciones Laborales*, 30, 115-137.

Oaxaca, R. (1973). Male-female wage differentials in urban labour markets. *International Economic Review*, 14, 693-709.

OECD (2010). *International Migration Outlook*. Paris: OECD.

OECD (2011). *International Migration Outlook*. Paris: OECD

OECD (2012). *International Migration Outlook*. Paris: OECD

Ottaviano, G. & Peri, G. (2012). Rethinking the effect of immigration on wages. *Journal of the European Economic Association*, 10, 152-197.

Paggiaro, A. (2013). How do immigrants fare during the downturn? Evidence from matching comparable natives. *Demographic Research*, 28, 229-258.

Pérez-Infante, J. I. (2006). *Las estadísticas del mercado de trabajo en España*. Madrid: Ministerio de Trabajo e Inmigración, Gobierno de España.

Price, S. W. (2001). The employment adjustment of male immigrants in England. *Journal of Population Economics*, 14, 193-220.

Sanromà, E., Ramos, R., & Simon, H. (2008). The Portability of Human Capital and Immigrant Assimilation: Evidence for Spain. *IZA Discussion Paper* No. 3649.

Schmitt, J. & Wadsworth, J. (2007). Changes in the relative economic performance of immigrants to Great Britain and the United States, 1980-2000. *British Journal of Industrial Relations*, 45, 659-686.

Silva, J., & Vázquez-Grenno, J. (2011). The ins and outs of unemployment and the assimilation of recent immigrants in Spain. *Journal of Population Economics*, 24, 1309-1330.

Silva, J., & Vázquez-Grenno, J. (2013). The ins and outs of unemployment in a two-tier labor market. *Labour Economics*, 24, 161-169.

Yun, M. (2004). Decomposing differences in the first moment. *Economics Letters*, 82, 275-280.

Table 1. Rates of job loss.

	Men		Women	
	Native	**Immigrant**	**Native**	**Immigrant**
2008 Q1	5.55	11.27	6.95	11.58
2008 Q3	7.05	16.06	7.93	10.85
2009 Q1	8.91	24.59	8.26	12.77
2009 Q3	7.97	18.26	8.80	10.54

Note: Figures in percentage points.

Table 2. Descriptive of worker and job characteristics.

	2008 Q1				2008 Q3				2009 Q1				2009 Q3			
	Men		Women		Men		Women		Men		Women		Men		Women	
	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm
Age																
20-24 years	9.9	10.5	9.3	10.6	9.3	12.9	9.1	13.1	9.0	9.4	8.6	10.6	8.0	9.6	8.0	9.9
25-29 years	17.0	22.2	17.7	25.4	16.6	20.4	17.7	23.6	16.5	19.6	17.2	23.5	15.9	19.5	16.6	21.0
30-34 years	19.7	26.7	20.2	26.0	20.2	28.1	20.4	23.8	20.1	25.9	20.6	24.1	20.3	27.4	20.7	24.1
35-39 years	19.1	19.5	18.4	18.2	18.9	19.3	18.5	19.1	19.1	21.4	18.6	19.2	19.7	21.5	19.1	21.0
40-44 years	17.9	13.2	17.8	12.6	18.1	12.0	17.8	12.9	18.2	15.2	17.8	14.1	18.6	13.7	18.3	14.5
45-49 years	16.5	8.0	16.7	7.3	17.0	7.4	16.6	7.5	17.1	8.6	17.2	8.5	17.4	8.3	17.3	9.6
Years of schooling	11.8	10.1	12.8	10.8	11.8	10.2	12.8	11.1	11.9	10.3	12.8	10.9	11.9	10.2	12.8	11.0
Educational attainment																
Primary or lower	8.7	25.9	5.6	19.6	8.5	24.0	5.6	15.5	7.7	22.3	4.8	17.8	7.4	24.0	4.8	18.0
Lower secondary	34.4	20.6	23.6	21.0	34.9	20.5	23.5	22.8	34.1	22.9	24.2	22.4	33.4	22.0	22.8	20.5
Upper secondary	22.8	35.9	24.0	39.3	22.4	38.4	23.6	40.5	22.6	39.0	23.7	40.4	22.9	38.4	24.0	41.8
Higher educ 1 level	22.1	9.4	29.1	11.1	21.7	9.9	29.4	13.4	23.0	7.9	29.4	11.3	23.0	8.4	29.7	11.4
Higher educ 2 level	12.0	8.3	17.7	9.1	12.6	7.2	17.9	7.8	12.6	7.9	17.9	8.2	13.2	7.2	18.6	8.4
Occupation																
Technicians and professionals	27.1	3.2	36.8	4.5	27.1	3.4	37.0	4.5	28.3	3.2	37.1	4.7	28.7	4.6	37.8	4.7
Accontancy, admin and other office empl.	7.3	2.6	18.9	6.0	7.5	2.0	19.5	6.8	7.2	1.3	18.9	6.1	7.5	1.5	19.1	4.7
Catering, protection serv, and salepersons	11.6	10.8	23.4	28.2	11.7	11.9	23.7	34.2	12.5	11.6	24.5	33.7	13.2	15.1	24.7	33.7
Specialised workers in agric, manuf, and constr	26.7	43.4	2.5	3.0	26.6	44.0	2.3	2.4	25.4	42.5	2.2	2.0	24.6	37.6	2.4	2.2
Instalation and machinery operators	16.8	11.5	3.7	2.3	16.9	11.9	3.6	2.5	16.6	12.7	3.3	3.1	15.9	13.1	3.1	3.4
Elementary occupations	10.6	28.5	14.7	56.1	10.2	26.7	14.0	49.6	10.0	28.8	14.0	50.5	10.2	28.1	13.0	51.4
Sector																
Agriculture, lifestock, forestry and fishing	2.2	8.8	1.5	4.2	2.0	7.1	1.4	3.3	2.4	9.1	1.5	3.9	2.4	10.5	1.3	3.8
Food, textile, wood, and paper	5.6	5.4	5.0	3.9	5.5	6.6	4.8	3.3	5.2	6.8	4.3	3.9	5.3	5.7	4.1	3.5
Extractive, energy and water	10.8	7.0	3.5	1.4	11.0	6.8	3.5	1.7	10.7	6.6	3.2	0.9	9.8	6.5	3.1	1.1
Machinery and transport material	8.1	3.6	2.6	1.1	7.7	4.4	2.6	1.3	7.8	3.6	2.6	0.8	7.8	2.6	2.8	1.0
Construction	18.3	44.4	2.6	0.6	17.6	41.8	2.5	1.5	15.5	37.8	2.1	0.6	14.8	32.6	2.1	0.5
Retail and hospitality	16.9	17.1	24.7	34.1	17.3	18.3	24.8	32.8	17.5	18.1	25.2	35.2	17.9	21.5	25.3	34.2
Transport	10.9	6.0	5.5	1.1	11.3	6.0	5.6	2.1	11.6	7.6	5.5	2.2	11.7	7.1	5.2	2.1
Financ serv, real state, and other prof serv.	9.9	4.4	15.5	11.4	10.0	5.0	15.6	9.5	10.5	6.0	15.6	8.2	10.4	6.4	15.5	8.2
Public Adm, education and health	14.4	1.0	31.0	3.0	15.0	1.5	31.1	4.2	15.9	1.3	32.4	5.7	16.9	2.8	32.9	5.5
Other soc serv	2.7	2.3	8.2	39.3	2.6	2.6	8.1	40.3	3.0	3.2	7.6	38.6	3.1	4.3	7.7	40.0

Table 2. Descriptive of worker and job characteristics. (cont.)

	2008 Q1				2008 Q3				2009 Q1				2009 Q3			
	Men		Women		Men		Women		Men		Women		Men		Women	
Region	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm
Andalusia	18.2	11.8	15.9	11.4	18.2	9.1	16.3	10.4	17.2	9.0	15.9	11.3	17.3	8.4	16.1	10.9
Aragon	2.8	3.3	2.9	3.6	3.0	3.2	2.8	3.4	2.9	3.5	2.8	3.8	2.8	3.5	2.8	3.3
Asturias	2.4	0.5	2.4	1.0	2.5	0.6	2.4	1.1	2.4	0.7	2.4	1.0	2.3	0.7	2.3	1.1
Balearic Islands	2.1	3.3	2.3	3.6	2.2	3.7	2.3	4.4	2.1	3.9	2.2	3.9	2.5	3.8	2.5	3.8
Canary Islands	4.8	4.5	4.5	3.9	4.7	4.8	4.3	5.1	4.5	4.7	4.2	4.1	4.6	4.5	4.2	4.0
Cantabria	1.4	0.6	1.3	0.5	1.4	0.5	1.3	0.8	1.5	0.6	1.4	0.8	1.5	0.7	1.3	0.9
Castilla Leon	5.5	2.3	5.4	2.6	5.6	2.9	5.3	2.5	5.7	2.6	5.4	2.6	5.6	3.2	5.5	2.6
Castilla La Mancha	4.4	4.2	4.0	3.3	4.5	3.8	3.9	3.1	4.6	4.9	4.1	3.6	4.6	5.0	3.9	2.9
Catalonia	15.9	22.4	17.5	19.6	15.6	22.9	17.4	19.6	15.8	21.2	16.9	17.8	15.8	19.4	17.3	17.8
Valencia	10.1	16.0	10.4	15.2	10.2	15.5	10.0	14.8	10.3	14.2	9.9	14.6	9.9	14.2	9.5	14.8
Extremadura	2.5	0.3	2.2	0.2	2.5	0.3	2.2	0.5	2.5	0.6	2.2	0.5	2.5	0.5	2.1	0.5
Galicia	6.2	1.0	6.1	1.6	6.3	0.9	6.3	2.1	6.3	1.6	6.5	2.0	6.3	1.6	6.4	1.7
Madrid	13.5	22.0	14.8	24.1	13.6	22.4	15.2	23.4	14.1	22.7	15.7	24.7	14.3	24.7	15.6	25.5
Murcia	3.0	4.4	2.8	4.6	2.9	5.7	2.8	4.7	2.8	6.1	2.8	4.6	2.8	6.0	2.8	5.4
Navarra	1.3	1.0	1.5	1.4	1.4	1.0	1.5	1.2	1.5	1.1	1.5	1.5	1.5	1.0	1.4	1.3
Basque Country	5.1	1.4	5.3	2.6	4.9	1.7	5.5	2.4	5.2	1.6	5.6	2.5	5.2	2.0	5.5	2.5
La Rioja	0.7	0.9	0.7	0.8	0.7	0.9	0.6	0.7	0.7	0.9	0.7	0.8	0.7	0.9	0.7	1.0

Notes: Excepting years of schooling, all the other figures in %. Nat: native-born workers. Imm: immigrant workers.

Table 3. Rate of job loss within some key characteristics.

	2008 Q1				2008 Q3				2009 Q1				2009 Q3			
	Men		**Women**		**Men**		**Women**		**Men**		**Women**		**Men**		**Women**	
	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm
Age																
20-24 years	14.0	19.4	15.0	18.4	19.1	12.8	18.5	10.6	18.2	25.8	18.9	14.4	19.2	24.0	22.7	21.0
25-29 years	7.6	14.4	7.9	9.4	8.9	19.2	9.0	14.1	11.7	23.8	10.2	13.7	11.8	15.2	10.7	10.9
30-34 years	4.8	7.3	6.0	10.8	5.7	13.6	6.9	11.2	8.4	23.2	7.0	13.5	6.6	18.5	7.5	8.0
35-39 years	3.6	11.8	6.1	10.4	5.3	17.9	6.4	8.8	7.4	23.6	6.9	11.3	6.9	19.5	6.3	13.2
40-44 years	3.6	9.5	5.7	12.9	4.4	18.9	6.6	9.4	6.4	26.0	6.5	9.2	5.5	14.1	7.8	6.4
45-49 years	3.6	6.7	4.7	12.4	5.0	13.0	5.4	7.6	6.2	29.4	5.8	15.4	4.8	21.7	5.9	5.9
Educational attainment																
Primary or lower	12.4	11.8	15.2	10.5	14.3	21.7	15.6	14.7	18.5	26.7	14.5	12.5	16.4	21.5	16.5	12.6
Lower secondary	6.7	13.6	10.6	12.3	9.3	16.0	11.4	10.7	12.4	27.8	14.0	13.8	10.7	19.6	13.3	11.4
Upper secondary	5.1	10.0	7.2	11.5	5.5	11.9	7.0	8.5	7.6	24.0	8.0	13.7	6.7	16.9	8.1	9.6
Higher educ 1 level	3.3	10.2	4.6	10.6	4.5	14.5	6.8	12.6	5.3	16.2	5.5	7.7	5.1	10.0	7.2	5.8
Higher educ 2 level	2.2	10.3	3.0	13.9	3.0	21.8	4.1	13.1	2.6	20.8	3.8	13.0	3.5	20.4	4.9	15.0
Occupation																
Technicians and professionals	2.3	5.0	3.2	9.9	3.9	4.8	4.9	4.1	4.0	6.6	3.9	15.1	4.4	4.8	5.6	10.7
Accountancy, admin and other office empl.	3.3	9.4	4.9	9.3	3.9	2.0	5.9	7.8	5.6	23.0	7.0	13.0	5.2	11.3	6.0	10.1
Catering, protection serv, and salepersons	5.9	11.5	8.5	13.9	4.8	13.7	9.4	7.5	7.3	18.7	10.2	16.1	5.8	11.6	10.0	10.3
Specialised workers in agric, manuf, and constr	6.8	9.5	12.9	10.1	9.3	17.5	13.5	3.3	12.0	27.5	14.2	12.7	11.1	18.7	21.4	13.4
Instalation and machinery operators	4.5	5.4	7.8	16.7	5.5	6.8	9.3	31.3	9.1	20.0	11.7	15.2	5.5	11.9	12.3	15.8
Elementary occupations	13.6	17.1	15.3	10.7	17.0	21.4	15.0	13.5	19.0	26.8	16.3	10.2	19.5	26.7	16.9	10.3
Sector																
Agriculture, lifestock, forestry and fishing	20.7	19.9	54.0	37.0	22.1	25.0	51.2	29.2	24.9	20.6	54.7	26.3	29.9	39.0	65.5	37.6
Food, textile, wood, and paper	3.4	6.8	8.6	9.0	5.7	8.8	9.7	12.2	6.2	23.9	10.0	22.5	5.0	11.1	13.2	13.5
Extractive, energy and water	3.6	5.7	3.7	5.8	5.1	9.5	4.3	20.6	5.9	15.7	8.0	4.3	5.3	7.9	4.3	1.3
Machinery and transport material	3.2	3.8	5.4	4.5	5.2	20.3	5.6	27.7	6.4	14.1	7.9	4.6	6.3	1.9	6.5	23.8
Construction	9.8	12.8	6.1	6.2	14.2	20.8	6.4	33.1	19.4	32.4	5.4	15.4	16.7	25.2	7.6	0.0
Retail and hospitality	5.5	10.1	8.2	14.3	5.8	11.1	8.3	9.3	8.5	18.4	9.7	16.8	6.3	9.8	9.8	11.7
Transport	4.3	3.6	6.3	28.7	4.0	7.2	5.9	13.6	6.3	25.1	9.2	16.0	5.1	10.5	6.6	2.6
Financ serv, real state, and other prof serv.	4.6	15.5	5.4	11.2	4.5	9.6	6.5	11.4	6.1	21.2	6.8	6.1	5.1	14.4	6.7	14.4
Public Adm, education and health	2.9	9.8	4.9	7.9	4.7	19.5	6.7	13.1	4.8	8.9	5.5	14.4	5.6	5.9	7.2	10.4
Other soc serv	6.6	8.4	6.8	7.1	7.5	10.2	10.0	8.3	8.6	22.3	8.5	8.0	9.6	19.2	9.5	6.4

Notes: Figures in percentage points. Nat: native-born workers. Imm: immigrant workers.

Table 4. Estimate of the marginal effect of being immigrant.

	Model 1		Model 2		Model 3	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
2008 Q1	0.0671***	0.0385***	0.0428***	0.0199***	0.0302***	0.0213**
	(0.008)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)
2008 Q3	0.0934***	0.011	0.0632***	-0.0043	0.0409***	-0.0055
	(0.009)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)
2009 Q1	0.1457***	0.0342***	0.1102***	0.0148*	0.0819***	0.0140*
	(0.011)	(0.008)	(0.011)	(0.008)	(0.010)	(0.008)
2009 Q3	0.0947***	0.0104	0.0661***	-0.0033	0.0366***	-0.0096
	(0.010)	(0.021)	(0.009)	(0.007)	(0.008)	(0.007)

Notes: Standard errors in ( ). Model 1: Immigrant dummy. Model 2: Model 1 + years of schooling and age. Model 3: Model 2 + dummies for occupation, sector, and region. All three models are estimated controlling for sample selection.

Table 5. Marginal effects for immigrant and native-born workers.

| | 2008 Q1 | | | | 2008 Q3 | | | |
| | Male | | Female | | Male | | Female | |
	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm
Years of Schooling	-0.003***	0.000	-0.003***	-0.001	-0.005***	-0.004	-0.004***	-0.002
Age								
25-29 years	-0.005	-0.010	-0.026***	-0.042*	-0.022***	0.046	-0.043***	0.030
30-34 years	-0.022***	-0.058	-0.040***	-0.054**	-0.037***	0.003	-0.055***	0.021
35-39 years	-0.031***	-0.045	-0.045***	-0.049**	-0.045***	0.035	-0.062***	-0.008
40-44 years	-0.032***	-0.046	-0.051***	-0.035	-0.051***	0.068*	-0.068***	0.018
45-49 years	-0.034***	-0.058**	-0.058***	-0.053**	-0.052***	0.010	-0.078***	-0.029
Occupation								
Technicians and professionals	-0.031***	-0.097***	-0.064***	-0.038	-0.032***	-0.090**	-0.047***	-0.059***
Account, admin, other office empl.	-0.024***	0.011	-0.043***	-0.034	-0.039***	-0.099**	-0.040***	-0.049***
Catering, protect serv, salepersons	-0.016***	0.026	-0.025***	0.014	-0.036***	0.023	-0.023***	-0.030
Spec workers in agr, man, and const	-0.022***	-0.040	-0.014	-0.016	-0.031***	-0.034	-0.001	-0.062***
Instalation and machinery operators	-0.023***	-0.048*	-0.025***	0.086	-0.033***	-0.098***	-0.014	0.041
Sector								
Agric, lifestock, forestry and fishing	0.071***	0.087*	0.282***	0.154**	0.083***	0.086	0.318***	0.056
Food, textile, wood, and paper	-0.008	-0.001	0.010	-0.012	0.001	0.004	0.014	0.104
Extractive, energy and water	-0.012***	0.022	-0.009	-0.086**	-0.006	0.024	-0.014	0.023
Machinery and transport material	-0.014***	-0.032	0.004	-0.077*	-0.001	0.151**	-0.005	0.029
Construction	0.021***	0.051	0.020	-0.023	0.053***	0.114***	0.021	0.251**
Transport	0.002	-0.056	0.016	0.118	-0.006	0.097	0.017	0.123
Fin serv, real state, other prof serv.	0.009	0.086	-0.001	0.044	0.004	0.002	0.006	0.013
Public Adm, education and health	-0.002	0.093	0.006	-0.012	0.015**	0.156	0.023***	0.085
Other soc serv	0.025**	-0.005	-0.019***	-0.082***	0.021	0.058	0.003	-0.035*

| | 2009 Q1 | | | | 2009 Q3 | | | |
| | Male | | Female | | Male | | Female | |
	Nat	Imm	Nat	Imm	Nat	Imm	Nat	Imm
Years of Schooling	-0.007***	-0.004	-0.004***	-0.003	-0.005***	-0.002	-0.003***	-0.005**
Age								
25-29 years	-0.000	0.014	-0.041***	0.017	-0.008	-0.067**	-0.047***	-0.058***
30-34 years	-0.024***	-0.010	-0.056***	0.036	-0.031***	-0.045	-0.067***	-0.065***
35-39 years	-0.036***	0.002	-0.058***	0.003	-0.033***	-0.038	-0.072***	-0.038*
40-44 years	-0.043***	0.026	-0.067***	-0.024	-0.046***	-0.050*	-0.075***	-0.059***
45-49 years	-0.050***	0.102*	-0.075***	0.010	-0.053***	-0.043	-0.085***	-0.048**
Occupation								
Technicians and professionals	-0.049***	-0.090	-0.069***	0.016	-0.039***	-0.085**	-0.053***	0.025
Account, admin and office empl.	-0.035***	-0.076	-0.042***	-0.026	-0.033***	-0.048	-0.046***	-0.011
Catering, protect serv, salepersons	-0.037***	-0.038	-0.027***	0.020	-0.040***	-0.042	-0.034***	0.001
Spec workers in agr, man, and const	-0.034***	-0.025	0.010	-0.003	-0.033***	-0.042*	0.021	-0.020
Instalation and machinery operators	-0.028***	-0.020	0.002	0.041	-0.040***	-0.037	-0.003	0.052
Sector								
Agric, lifestock, forestry and fishing	0.072***	0.038	0.287***	0.131*	0.113***	0.231***	0.337***	0.176**
Food, textile, wood, and paper	-0.020***	0.000	-0.001	0.057	-0.005	-0.003	0.002	0.023
Extractive, energy and water	-0.019***	0.043	0.026	-0.074*	0.000	0.015	-0.027**	-0.053*
Machinery and transport material	-0.005	0.038	0.002	-0.067	0.003	-0.092*	-0.037***	0.065
Construction	0.070***	0.138***	0.011	0.034	0.072***	0.159***	0.002	-0.083***
Transport	-0.001	0.097	0.033**	0.009	0.009	-0.016	0.002	-0.059**
Fin serv, real state, other prof serv.	-0.002	0.109	-0.004	-0.049*	-0.001	0.068	-0.017***	0.013
Public Adm, education and health	-0.007	-0.115	0.005	-0.017	0.017**	-0.035	0.002	-0.015
Other soc serv	0.011	0.104	-0.018***	-0.063***	0.052***	0.130*	-0.012*	-0.051**

Notes: Nat: native-born workers. Imm: immigrant workers. ***, **, and * denote significant at 99%, 95%, and 90% respectively. Estimates were obtained controlling for sample selection. Regional dummies were included in all cases. Omitted categories were: 20-24 years, Elementary occupations, Retail and Hospitality, and Andalusia.

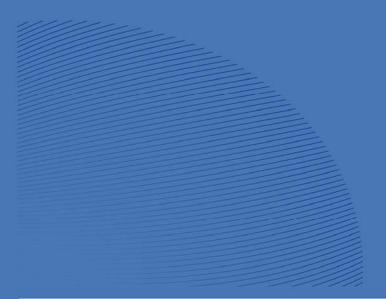## Table 6. Results of the decomposition of the immigrant-native gap.

MALE WORKERS

		2008 Q1		2008 Q3		2009 Q1		2009 Q3	
Overall									
	Immigrant	11.27	***	16.05	***	24.61	***	18.25	***
	Native	5.55	***	7.04	***	8.91	***	7.98	***
	Gap	5.72	***	9.01	***	15.71	***	10.27	***
	Explained	3.48	***	5.10	***	5.59	***	5.67	***
	Unexplained	2.25	***	3.92	***	10.12	***	4.60	***
Detailed									
Explained									
	Human Cap.	1.54	***	2.25	***	2.22	***	2.14	***
	Segregation	1.93	***	2.85	***	3.37	***	3.52	***
Unexplained									
	Human Cap.	5.40	***	3.71		7.44	**	6.49	*
	Segregation	-0.83		-0.26		0.18		0.64	
	Constant	-2.33		0.47		2.50		-2.53	

FEMALE WORKERS

		2008 Q1		2008 Q3		2009 Q1		2009 Q3	
Overall									
	Immigrant	11.58	***	10.88	***	12.90	***	10.62	***
	Native	6.95	***	7.93	***	8.26	***	8.80	***
	Gap	4.63	***	2.95	**	4.64	***	1.82	*
	Explained	3.27	***	3.50	***	3.91	***	4.47	***
	Unexplained	1.36		-0.55		0.73		-2.65	**
Detailed									
Explained									
	Human Cap.	1.51	***	1.82	***	1.81	***	1.54	***
	Segregation	1.76	***	1.69	**	2.10	***	2.93	***
Unexplained									
	Human Cap.	3.81		3.03		3.76		-1.98	
	Segregation	-0.55		-1.50		0.34		-4.16	*
	Constant	-1.89		-2.08		-3.37		3.48	

Notes: Figures in percentage points. ***, **, and * denote significant at 99%, 95%, and 90% respectively.

Table 7. Results of the decomposition in 2012.

		MALE WORKERS		FEMALE WORKERS	
		2012 Q1	2012 Q3	2012 Q1	2012 Q3
Overall					
	Immigrant	23.16 ***	18.39 ***	11.31 ***	12.45 ***
	Native	9.56 ***	9.32 ***	9.13 ***	10.18 ***
	Gap	13.6 ***	9.07 ***	2.18 **	2.27 *
	Explained	8.07 ***	7.43 ***	6.08 ***	4.92 ***
	Unexplained	5.53 ***	1.64	-3.9 ***	-2.65 *
Detailed					
Explained					
	Human Cap.	1.4 ***	2.16 ***	1.31 ***	1.34 ***
	Segregation	6.67 ***	5.27 ***	4.77 ***	3.58 ***
Unexplained					
	Human Cap.	9.61 **	8.25 *	6.93	-0.7
	Segregation	-0.32	-4.03	-1.24	-3.75
	Constant	-3.76	-2.59	-9.6	1.79

Notes: Figures in percentage points. ***, **, and * denote significant at 99%, 95%, and 90% respectively.