Journal of Applied Economics

José Ignacio Antón
Rafael Muñoz de Bustillo
Miguel Carrera

Labor market performance of Latin American and Caribbean immigrants in Spain

UCEMA

LABOR MARKET PERFORMANCE OF LATIN AMERICAN AND CARIBBEAN IMMIGRANTS IN SPAIN

José Ignacio Antón*, Rafael Muñoz de Bustillo
and Miguel Carrera

University of Salamanca

This paper analyzes the wage differentials in Spain between local and foreign employees from Latin America and the Caribbean. It also explores the earnings gap between Latin American employees and other groups of foreign workers from both developing and developed countries. The study is based on the *Wage Structure Survey 2006*, which is the first nationally representative sample of both foreign and Spanish employees. Using the Machado-Mata econometric procedure, earnings differentials across the whole wage distribution are decomposed into a component related to observable characteristics and another associated to different returns to such endowments. First, we find that, in absolute terms, the earnings differential between Latin American and Caribbean immigrants and natives that is not explained by observable characteristics increases across the wage distribution. While the large gap at the top might be mainly explained by problems of transferability of skills among immigrants, the low differential at the bottom is likely to be related to the compressive effect exerted by labor market institutions such as the minimum wage and collective agreements. A quite similar pattern is observed when they are compared with developed countries´ workers. Secondly, there does not seem to be a significant wage gap between Latin American and the rest of foreign employees from developing countries, possibly because immigrants are largely employed in low-skill jobs where Spanish proficiency is not an essential asset.

JEL classification codes: J71, F22
Key words: immigration, wage differentials, Latin America, Spain, quantile regression

I. Introduction

Migration flows between America and Spain since the 16th century clearly illustrate how paradoxical history might be. When some Latin American and Caribbean countries were hosting thousands of Spaniards at the beginning and in the middle of the last century -among them, some of the most renowned Spanish intellectuals in history-, few people could even imagine that the situation would be exactly the opposite at the beginning of the 21st century, with almost 2 million Latin American and Caribbean people (more than one third of Spain's foreign population) migrated to Spain in search of better economic opportunities.[1] In many cases, these migrants were descendents of Spanish exiles or economic migrants to America in the 20th century.

The aim of this paper is to assess how these Latin American and Caribbean immigrants fare in the Spanish labor market compared to both native-born employees and other foreign workers, particularly in terms of earnings. This topic is important for several reasons. First of all, labor market performance of Latin American and Caribbean immigrants has not received much attention outside the United States. Second, apart from the existence of a common language and shared cultural values, the interest of the Spanish case derives not only from the impressive increase in immigration flows experienced by the country during the last decade, but also from the Spaniards' surprisingly negative attitudes towards immigrants according to opinion polls. For example, in 2006, in a period of economic boom, Spaniards considered immigration as the most important problem faced by the country, well above unemployment and housing (CIS 2006).[2] In addition, most studies on earnings differentials between immigrants and locals are focused on Anglo-Saxon and Nordic countries, as well as Central Europe and Benelux, which have been the main host countries in the OECD until recently.

---

[1] In 1950 the GDP per capita of Argentina and Uruguay was twice that of Spain, while the Venezuelan per person income was three times higher than the Spanish one (Maddison 2001).

[2] It is worth mentioning that according to sociological surveys (CIS 2003), Spaniards tend to exhibit several prejudices against Latin American migrants. For example, 45% of Spaniards interviewed in 2003 by the Spanish Center of Sociological Research, when asked about what characteristics best define Latin American and Caribbean People, answered that Latin Americans were authoritarian (rather than democratic); 26% of surveyed locals described them as lazy (rather than industrious) and 57%, as conservative people (rather than progressive). In addition, according to the Eurobarometer 71.2, an opinion survey carried out by the European Union authorities, 66% of Spaniards thought that discrimination on grounds of ethnic origin (which in Spain is almost a synonym of immigration from developing countries) is fairly widespread or very widespread in the country in 2009 (European Commission 2009).

With that objective, we use a recently released earnings survey containing, for the first time, sufficient observations from immigrants. Using the Machado-Mata econometric decomposition (Machado and Mata 2005), we split the earnings gaps between Latin American employees and other workers across the whole wage distribution into a first component associated with observable endowments and a second one capturing the differential unexplained by these observable socio-demographic characteristics (or, in other words, the differential returns to such endowments). We find that, once human capital endowments are controlled for, the earnings gap between Latin Americans and both Spaniards and foreign workers from developed countries increases across the wage distribution, while there is no substantial earnings gap between employees from Latin America and the Caribbean and other workers from developing countries.

The rest of the article is organized in four parts as follows. In Section II, we present the literature review and a brief historical background of immigration flows. Section III provides a description of the methodology and the database used in the paper. Our results are discussed in Section IV, while the last section summarizes and discusses the main findings of the research.

II. Literature review and historical background

Though immigration and the labor market is a popular area of economic research, most such work has focused on world migration as a whole or on specific countries, such as the United States, Germany, Canada or Sweden, which have often provided academics with large and comprehensive datasets. To our knowledge, Latin American and Caribbean immigration has received scant attention outside the United States, where, among others, the studies of Gammage and Schmitt (2004) and Rivera-Batiz (2007) can be highlighted. The former finds substantial earnings differentials between male and female Central American migrants, while the latter analyzes average wage gaps between Latin American and native-born workers. There is plenty of evidence suggesting the existence of wage differentials between locals and migrants once we control for observable characteristics in international case studies, although there is no consistent pattern across countries. For example, the pay disadvantage faced by foreign-born workers is concentrated mainly at the bottom of earnings distribution in Sweden according to Hammarstedt and Shukur (2006 and 2007)[3]

---

[3] But it is roughly constant according to Albrecht, Björklund and Vroman (2003).

and the U.K. (Hunt 2008), while it increases along with wages in the U.S. and Australia (Chiswick, Le and Miller 2008).

Apart from the role of human capital stocks, there are several reasons that can contribute to explain the earnings gap between migrants and natives. First, the main source of these differentials might be associated with the limited transferability of immigrants' skills, that is, education and training acquired abroad would not be recognized in the same way in the host country. This fact would result in occupational segregation and higher levels of over-education among foreign workers than among natives (Chiswick and Miller, 2008 and 2009). The recent work of Sanromà, Ramos and Simón (2009) for Spain, which find that human capital acquired in the host country yields higher returns than those accumulated in the country of origin, also supports such a statement. This factor might be also linked to the existence of differences in the quality of education or the absence of information on this issue for employers. If this argument applies, the immigrant-native wage gap at the top of the wage distribution should be larger than at the bottom since the jobs associated with the higher part of the earnings distribution usually demand higher qualifications.

A second broad group of explanations for the existence of different returns to endowments comes from the theories of labor market discrimination or, in more general terms, differential treatment by employers.[4] Their point of departure is Becker's (1957) view based on employer's tastes: some employers dislike people from other ethnic groups (modeled as a utility loss derived from hiring them) and, in competitive labor markets, if the share of prejudiced employers is sufficiently large, foreign workers might earn a lower wage than locals. Theories of statistical discrimination also offer a framework for understanding the existence of wage gaps between natives and immigrants based on the lack of information or informational asymmetries (Arrow 1973; Phelps 1972). If there is no perfect information on certain characteristics of immigrants (for example, quality of education) or firms have less knowledge of them, employers will tend to base their hiring and pay decisions on the observable characteristics of the workers, like the ethnic group they belong to. For example, it is worth mentioning that in the Spanish rental housing market, there is evidence that, *ceteris paribus*, migrants receive a differential treatment by landlords (Bosch, Carnero and Farré 2009). In the case of Spain, where immigrants from developing countries represent the exception in an otherwise ethnically homogenous society, the hypothesis of discrimination based on racial issues might have some room.

---

[4] See Arrow (1998) for a comprehensive and didactic review.

Another interesting and more recent perspective of looking at this issue is the idea of monopsonistic discrimination, inspired by Joan Robinson's (1933) work on imperfect markets. Drawing on the idea of dynamic labor market monopsony, it is argued that workers' labor supply to the firm (different from the labor supply to the market) might not be completely elastic because of job search frictions, heterogeneous preferences among workers or mobility costs (Burdett and Mortensen 1998). In this context, if it differs across groups, a profit-maximizing employer can exploit this fact by paying less to the group with the lower labor supply elasticity for the firm, other things being equal. There is a growing body of empirical literature showing the potential of this approach in explaining the lower wages received by women (Mannning 2003, and Barth and Dale-Olsen 2009), Afro-American workers (Raphael and Riker 1999) and undocumented employees (Hotchkiss and Quispe-Agnoli 2009). Considering that Spanish immigrants might have lower reservation wages (for instance, because of a lower access to contributory unemployment benefits based on previous labor market experience) and the excess of labor supply that has characterized the national labor market for many years, monopsonistic discrimination might play a role in explaining the existence of wage differentials between migrants and locals in Spain.[5]

Regarding the historical background of immigration in Spain, although this country was traditionally a country of emigrants (Latin American and Caribbean countries being their main hosts), since the middle 90s, in barely a decade, Spain has become one of the largest recipient countries of the European continent. The explosion of Latin American emigration to Spain is basically linked to the poor economic performance in Latin America in that period (often referred as the "lost half-decade") and to the remarkable economic recovery from the 1992-1993 world economic crisis in Spain. Those two factors, together with a shared language and cultural values, definitely played an important role in explaining how migration flowed in the opposite direction of what it was until the middle of the 20th century. In fact, the proportion of population born abroad rose from less than 2% in 1996 to roughly 12% in 2008, which made Spain the country undergoing the third largest increase in non-native population in the European Union (EU) during the last decade, after Greece and Ireland (Eurostat 2006).

---

[5] According to OECD statistics, nowadays the unemployment rate in Spain is the highest in the European Union (20% in the 1st quarter 2010) and was 8.5% in 2006. Furthermore, the proportion of over-qualified workers is remarkably high, as around 35% of males and 40% of females reported having jobs where their skills were underutilized (Budría and Moro 2006).

In terms of Latin American and Caribbean immigrants, the figures are even more impressive, since according to OECD and Eurostat data, in 2008 two out of three foreigners from Latin American and Caribbean countries living in a country of the European Union were located in Spain. As a result, according to the *2009 Local Population Register*, 1,800,000 Latin American and Caribbean people presently live in Spain, accounting for almost one out of three foreigners living in this country. The most extensively represented countries among Latin American and Caribbean immigrants in Spain are Ecuador (21%), Colombia (16%), Bolivia and Argentina (both around 10% of total Latin American migrants).

In spite of this relative novelty of immigration flows to Spain, there is some literature dealing with the labor market integration of foreign workers, although without making any distinction by nationality. The pioneering work of Dolado, Jimeno and Duce (1997) points out a negligible effect of migration on labor market outcomes at the beginning of the nineties, when the intensity of immigrations flows was very low. More recent research exploiting several data sources –among others, the *Spanish Wage Structure Survey 2002*, which does not offer coverage of small firms– reports similar findings for the second half of the nineties (Carrasco, Jimeno and Ortega 2008). Other researchers have focused on employment outcomes and occupational segregation of foreign workers, documenting different patterns of labor market integration among foreign-born workers depending both on socio-economic characteristics and country of origin (Amuedo-Dorantes and De la Rica 2007; Simón, Sanromá and Ramos 2008). These relatively poor employment outcomes, however, tend to eventually improve with the years of residence in Spain (Fernández and Ortega 2008). Finally, the work of Canal-Domínguez and Rodríguez-Gutiérrez (2008) aims to study wage differences between natives and foreigners in Spain, finds a substantial pay gap not explained by observable characteristics and which does not rise across the wage distribution, as in the case of highly educated women –the so-called glass ceiling phenomenon- (De la Rica, Dolado and Llorens 2008).

This paper is the first one to specifically address the study of wage differentials faced by Latin American and Caribbean immigrants in the Spanish labour market. Furthermore, it includes several additional insights with respect to previous works on Spanish immigration commented above. This work is based on the *Wage Structure Survey 2006*, which, as it is explained in Section III, is more appropriate to carry out this sort of study than those used in previous works. In addition, we compute standard errors for wage differentials across the earnings distribution that allows determining if such gaps are statistically significant.

III. Empirical strategy and data

A. Data

Previous studies of immigrant-native wage differentials have been constrained by serious data limitations, which, to some extent, are linked to the novelty of the immigration phenomenon in Spain. However, it should not be neglected that Spain is a step behind other OECD countries regarding data sources for analyzing labor market and social outcomes.

This work is based on the *Wage Structure Survey 2006* (WSS), released by the Spanish National Statistics Institute in December 2008.[6] The WSS has several advantages over previous databases. Firstly, while neither the *European Community Household Panel* nor the *Social Statistics on Living Conditions* or SILC (the household surveys containing information on labor income from the middle-nineties), provide a large enough and representative sample of foreign workers, the WSS includes a sample of local and foreign-born employees representative at national level and whose size can be considered appropriate for analysing foreigners' outcomes in isolation. For example, we have more than 10,000 employees born outside the EU, a sample size higher than the whole SILC. In addition, the WSS is based on administrative registers of employers, which is likely to increase the reliability of wage data.

Secondly, the WSS 2006 overcomes the evident limitations of the previous wave of the survey, carried out in 2002. The WSS 2002 only contains information on workplaces with ten or more employees, an important shortcoming considering the undeniable relevance of small firms in Spain, where, according to the *2007 Observatory of European Small and Medium Enterprises Survey*, more than 40% of total salaried workers are employed in firms with less than ten workers, being one of the countries where small and medium enterprises account for a largest share of employment in the European Union. This shortcoming might be especially problematic, since, according to data from the 2006 SILC, foreign workers are over-represented in small firms: while roughly 40% of native employees work in enterprises with ten or less employees, the proportion of immigrants in these types of firms is above 55%. Therefore, it is possible there is a selection bias, which, if based on unobservable characteristics or observable covariates not included in

---

[6] Details on sample design and questionnaires can be found at the website of the Spanish National Statistics Institute.

econometric analyses of wages, will lead to inconsistent estimation of the effect of human capital endowments on wages.

We limit our analyses to men between 25 and 55 years old for two different reasons. The first one is related to the double negative effect faced by foreign women in their double condition as females and immigrants.[7] Second, as our database only contains information on employees (not considering unemployed or self-employed population), there is likely to be some selection bias based on unobservable characteristics. By restricting our analysis to the group with higher employment rates (males), we try to minimize this bias.

A final point that requires some discussion is the definition of immigrant. The common approach in the economic literature is, when possible, to consider as immigrants those born abroad, since naturalization rules can differ depending on the country of birth because of the existence of special agreements with former colonies and so on. This is, for example, the case of most Latin American workers living in Spain. Unfortunately, this variable is not available in our database, so we have to use citizenship as a proxy for immigrant status. Fortunately, this issue does not have relevant implications in the Spanish case for several reasons. First, immigration in Spain is quite recent and has been concentrated in the last few years, which means that only a limited share of immigrants could have obtained the Spanish citizenship. Second, naturalization does not imply losing the first nationality in the case of Latin American immigrants, as there are international agreements allowing people from that region to have a double nationality. Third, using the micro-data of the Spanish Labor Force Survey from 2006 (2nd quarter), which contains information on both country of birth and nationality (but not wages), the correlation among the working age population between having a foreign nationality and being born abroad is above 90%.

The focus of the paper is on how Latin American and Caribbean immigrants fare in terms of earnings with respect to locals in Spain. Nevertheless, we also compare them with two other groups of foreigners. First, we contrast Latin Americans to those foreigners from geographical regions that on average have a lower level of development than Spain (European countries not belonging the EU-25, Oceania, Asia and Africa). Then, in order to study the specificity of the results found for Latin Americans, we also consider those workers coming from developed countries (among which EU-25 citizens mean 95% of total immigrants). In the European Union, natives tend to associate the concept of migrant with people from poorer

---

[7] This issue has been documented and studied by, among others, Beach and Worswick (1993), Shamsuddin (1998) and Kim (2002).

countries, not from other rich EU members, whose citizens resemble nationals very much (Brücker et al. 2002). Actually, this second group includes a high share of retirees looking for a milder climate and a relevant presence of expatriates with a relatively very high qualifications and standard of life (they may receive pluses in their salaries due to their status as expatriates) from the myriad EU multinationals in Spain. Those predominantly Caucasian retirees and workers from EU countries are very far from the common image in Spain of an immigrant.

Our sample comprises almost 98,000 observations, of which around 90,000 correspond to Spaniards and approximately 7,900 to foreign workers, with nearly 2,700 employees with citizenship of a Latin American or Caribbean country, roughly 3,500 from other developing countries and around 1,600 from developed countries.

B. The Machado-Mata decomposition

The seminal contributions made by Oaxaca (1973) and Blinder (1973) propose a relatively simple econometric technique to decompose the average gap into a component related to observable endowments and another one associated with differences in returns to observed characteristics. The main shortcoming of this approach is related to the fact that the gap in a certain outcome between two groups is likely not to be constant across the whole distribution of such outcome. For example, a null mean gap can be simply the average of large gaps of different signs at the tails, which obviously have very different policy implications than the absence of such gap.

Several approaches have been proposed to address this issue and compute the gaps conditioned on observable characteristics across the whole wage distribution. We follow the approach firstly proposed by Machado and Mata (2005), though we apply their method following the slightly modified but equivalent version suggested by Albrecht, Björklund and Vroman (2003) and De la Rica, Dolado and Llorens (2008).[8] The basic idea is to construct the counterfactual immigrant's wage distribution that would exist in the hypothetical case that immigrants' characteristics were remunerated exactly with the returns locals get for their endowments.[9] In more detail, the procedure unfolds as follows:

_____

[8] Other ways of analyzing unexplained wage gaps across the whole distribution have been proposed by DiNardo, Fortin and Lemieux (1996), based on semiparametric estimation methods, and Gardeazábal and Ugidos (2005) and Melly (2006) using quantile regression.

[9] We evaluate the gap at natives' coefficients, as De la Rica, Dolado and Llorens (2008) do when they address gender discrimination. On the contrary, Albrecht, Björklund and Vroman (2003) use the potentially

(1) Estimate quantile regressions for 99 percentiles using the native-born employees' dataset.[10]

(2) For each quantile, take a draw from the locals' sample and compute the predicted log wage for native-born employees at each quantile q, i.e., $x^n b^n(q)$. Repeat the process for the immigrants' database, calculating the predicted log wage $x^m b^n(q)$.

(3) Repeat step (2) M times and, in this way, obtain a counterfactual distribution of immigrants that reflects their remunerations as if they were paid as locals and the predicted distribution of immigrants retaining their characteristics and specific returns. Following Albrecht, van Vuuren and Vroman (2009), M is set to 100.

(4) Profiting from the linearity of quantile regression, calculate the counterfactual gap, that is, the wage differential associated with coefficients, as $x^m b^n(q) - x^m b^m(q)$.

One task seldom addressed in Spanish literature is the computation of standard errors or interval confidence for the counterfactual gap, a non-negligible issue in order to test if gaps at different quantiles are significantly different from zero.[11] Two different ways have been proposed in the literature: bootstrapping or deriving an asymptotic expression for the covariance matrix (Albrecht, van Vuuren and Vroman, 2009). To compute bootstrapped standard errors with large samples might be computationally cumbersome,[12] so we have used the latter procedure, which, as far as we know has only been implemented by Albrecht and his co-authors. The relevant issue here is to compute the variance of the difference between the predicted quantiles of the unconditional counterfactual distributions. According to Albrecht, Van Vueren and Vroman (2009), the variance of $\theta_{mn}(q) - \theta_m(q)$ is given by

$$Var\left[\theta_{mn}(q) - \theta_m(q)\right] = \frac{1}{99M}\left\{\frac{q(1-q)}{f_{nn}\left[\theta_{mn}(q)\right]^2} + \frac{q(1-q)}{f_m\left[\theta_m(q)\right]^2} - 2\frac{q(1-q)}{f_{nn}\left[\theta_{mn}(q)\right]f_m\left[\theta_m(q)\right]}\right\}. \qquad (1)$$

This variance can be consistently estimated using the predicted quantiles, $\hat{\theta}_m(q)$ $= x^m b^m(q)$ and $\hat{\theta}_{mn}(q) = x^m b^n(q)$ –which Albrecht and his co-authors prove to be

---

discriminated group (in their work, women) as the reference group. Using this alternative assumption, we obtained qualitatively similar results. Estimates are available from the authors on request.

[10] We applied a slightly modified version of Machado-Mata's method, as they take random draws from a uniform distribution between 0 and 1. Both approaches are equivalent in large samples.

[11] De la Rica, Dolado and Llorens's (2008) work is a remarkable exception to this trend.

[12] For example, with our database, it took us more than two hours to run the model in Stata once.

consistent estimators of the true quantiles $\theta_m(q)$ and $\theta_{mn}(q)$– and estimating by kernel density $f_{mn}(\cdot)$ and $f_m(\cdot)$, which represents the density functions of the counterfactual distributions evaluated at each percentile. Obviously, the population density functions are not known; however, as long as the sample is large, it is possible to estimate them using kernel density methods.[13] Note that standard errors for the difference between $\hat{\theta}_m(q)$ and $\hat{\theta}_n(q)$ will be larger, since they are not correlated and, hence, the covariance is null.

The procedure described above allows us to compute not only the estimated gap at each quantile, but also to determine if those differentials are statistically significant.

Regarding quantile regressions, following Koenker (2005), the model to be estimated can be expressed in the following way:

$$Y(q) = x\beta(q) + \varepsilon(q), \tag{2}$$

where Y denotes monthly gross wages (in logs), x includes a set of employee's observable characteristics, $\beta(q)$ is the parameter to be estimated, which captures the proportional wage change in the qth quantile conditional on x and $\varepsilon(q)$ is a disturbance satisfying $E(\varepsilon(q)|x) = 0$. Therefore, one can write conditional population quantiles $Quant_q(Y|X = x)$ as

$$Quant_q(Y|X = x) = x\beta(q). \tag{3}$$

The β can be consistently estimated by minimizing the sum of weighted absolute deviations using q and $1-q$ as weighting factors for positive and negative errors, respectively. Finally, the set of covariates includes age, squared age, education, tenure, firm size, dummies for sector of activity of the firm and regional dummies.

For comparative purposes, we also perform the standard Oaxaca-Blinder decomposition of differences in mean wages. Taking Spaniards as the reference group, the mean wage gap can be expressed as follows:

$$\overline{Y^n} - \overline{Y^m} = x^n b^n_{OLS} - x^m b^m_{OLS} = \left(x^n b^n_{OLS} - x^m b^n_{OLS}\right) + \left(x^m b^n_{OLS} - x^m b^m_{OLS}\right), \tag{4}$$

where b_{OLS} denotes the Ordinary Least Squares coefficients. The second term in the parenthesis captures the differences in mean wages not explained by observable characteristics.

---

[13] Particularly, we use a Gaussian kernel and the optimal bandwidth suggested by Silverman (1986).

    We proceed in two steps: first, we analyze the wage differentials between native and Latin American and Caribbean employees; second, we determine if there is a significant gap between Latin American and Caribbean and other immigrant's earnings, considering the latter as the reference group.

IV. Results

A. Descriptive statistics

The main descriptive statistics of the sample used in the analysis are reproduced in Table 1. They basically indicate that foreign employees are not a homogeneous set. Immigrants from Latin America and the Caribbean receive wages substantially lower than locals and foreigners from developed countries, while the gap with respect to other immigrants from developing countries is very narrow. They are younger and have lower human capital stocks –educational level and tenure- than nationals. In addition, compared to local employees, they tend to concentrate more in small and medium-size firms than local employees. Regarding differences between Latin American and Caribbean employees and other foreigners from developing countries, the most relevant one refers to schooling, showing the former a higher educational level than the latter. It is also worth mentioning that the proportion of foreign workers from developed countries who hold a university degree is three times higher than among Latin American and Caribbean workers and even larger than among local ones. This large percentage of highly educated people might be associated with the presence of foreigners from developed countries in managerial positions, which are usually referred as expatriates rather than migrants.

B. Econometric results

Selected quantile regressions (at the 10th, 25th, 50th, 75th and 90th percentiles) and OLS estimates for Spaniards, Latin American and Caribbean immigrants, other immigrants from developing countries and foreign workers from developed countries are presented, for simplicity, in Tables A1-A4 of the Appendix respectively. Here, we focus on the estimates of the wage gap associated with differences in returns, which are computed following the method described above and presented in Table 2 and Figures 1, 2 and 3. These figures also show both the raw and counterfactual mean gap obtained using the Oaxaca-Blinder approach. The counterfactual gap is significantly different from zero across the whole

Table 1. Descriptive statistics

	Spanish employees		Latin American and Caribbean employees		Other foreign employees from developing countries		Other foreign employees from developed countries	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Hourly gross wage (euros)	11.96	8.07	8.35	4.97	8.24	4.87	12.25	10.85
Hourly gross wage (in logs)	2.34	0.51	2.03	0.40	2.02	0.39	2.30	0.58
Age	38.48	8.42	36.13	7.46	35.76	7.15	37.35	7.93
Education								
Less than primary education	0.0673	0.2505	0.1618	0.3684	0.2404	0.4274	0.1161	0.3205
Primary education	0.1955	0.3966	0.3460	0.4758	0.3697	0.4828	0.2598	0.4386
Lower secondary education	0.2892	0.4534	0.2679	0.4429	0.2593	0.4383	0.1993	0.3996
Upper secondary education	0.2558	0.4363	0.1458	0.3530	0.0890	0.2847	0.1858	0.3891
University	0.1922	0.3940	0.0785	0.2690	0.0417	0.1999	0.2390	0.4266
Tenure	7.15	8.20	1.49	1.90	1.72	2.75	2.48	3.84
Firm size								
Less than 50 employees	0.5874	0.4923	0.5714	0.4950	0.5898	0.4919	0.4853	0.4999
Between 50 and 199 employees	0.1891	0.3916	0.2567	0.4369	0.2835	0.4508	0.3246	0.4684
200 employees or more	0.2235	0.4166	0.1719	0.3773	0.1267	0.3327	0.1901	0.3925

Source: authors' analysis from WSS 2006.

distribution in all cases. In general terms, our results point out three stylized facts.

First, the existence of increasing wage differentials between Spanish and Latin American and Caribbean employees across the distribution conditioned on endowments; pointing to the presence of a sort of glass ceiling similar to those described for female workers (Figure 1). Although all the theoretical explanations suggested in Section II might have some role in accounting for the existence of earnings differentials between migrants and locals, this particular pattern –a gap that grows across the wage distribution- deserves further comment.

On the one hand, the increase in the gap across the distribution might respond to a limited transferability of skills acquired in the country of origin, a circumstance that is more likely to appear the higher the skill level required for a job. If a certain job at the bottom of the distribution demands very basic skills, it is quite likely that the possibility of non-transferability will be very remote and the opposite applies to the top of the earnings distribution. Particularly, the research work of Sanromà, Ramos and Simón (2009) documents well how schooling levels obtained abroad are not as profitable as human capital acquired in Spain and also that their work experience at home is not valued as it would have been if they had been acquired in the host country. In contrast, at the bottom, the gap is very small, which might be explained by the effect of the existing labor market institutions. Among them is the potential role played by the national statutory minimum wage. This tool would act as a lower wage limit, a floor irrespectively of other considerations. Those workers with almost no qualifications

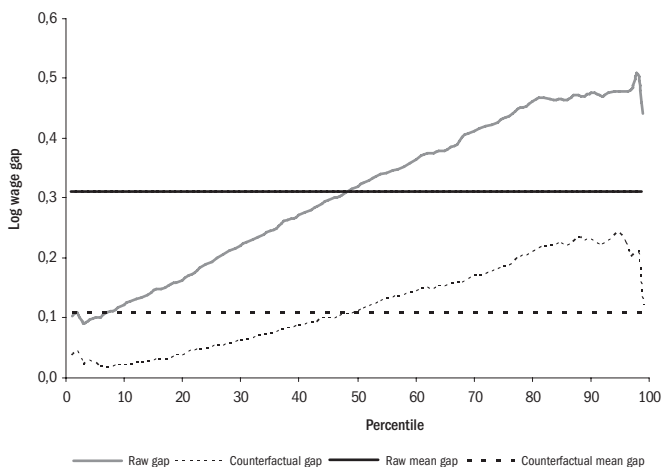Figure 1. Wage gaps between Spanish and Latin American and Caribbean employees in Spain (2006)

Source: authors' analysis from WSS 2006.

Table 2. Estimated raw and counterfactual wage gaps by percentile

Percentile	Spanish – Latin American and Caribbean employees		Latin American and Caribbean – other foreign employees from developing countries		Foreign employees from developed countries – Latin American and Caribbean employees	
	Raw gap	Counterfactual gap	Raw gap	Counterfactual gap	Raw gap	Counterfactual gap
10th	0.1227***	0.0206***	0.0041	-0.0002	0.0601***	0.0640***
	(0.0071)	(0.0004)	(0.0058)	(0.0003)	(0.0070)	(0.0012)
25th	0.1939***	0.0514***	0.0106***	0.0108***	0.1212***	0.1082***
	(0.0066)	(0.0010)	(0.0047)	(0.0002)	(0.0062)	(0.0009)
50th	0.3204***	0.1121***	0.0059	0.0065***	0.2364***	0.1487***
	(0.0072)	(0.0015)	(0.0052)	(0.0001)	(0.0076)	(0.0009)
75th	0.4324***	0.1852***	-0.0055	0.0049***	0.4198***	0.2154***
	(0.0097)	(0.0017)	(0.0085)	(0.0002)	(0.0119)	(0.0015)
90th	0.4763***	0.2312***	-0.0175	-0.0235***	0.5344***	0.2725***
	(0.0143)	(0.0002)	(0.0132)	(0.0007)	(0.0161)	(0.0013)
Mean gap (OLS)	0.3102***	0.1089***	-0.0024	-0.0023	0.2766***	0.1994***
	(0.0080)	(0.0078)	(0.0102)	(0.0054)	(0.0163)	(0.0169)

Notes: Standard errors between parentheses. *** significant at 1% ** significant at 5% * significant at 10%. Source: authors' analysis from WSS 2006.

would be pushed up in terms of wage in comparison to the wage they would receive in the absence of a minimum wage. It is worth mentioning that the minimum wage has been rising considerably in Spain since 2004. For example, in real terms, it was raised by more than 10% between 2004 and 2006 and by more than 20% from 2004 to 2009, reaching 633 euros a month in 2010 (21 euros a day). Collective bargaining agreements, which cover both unionized and non-unionized workers in Spain, could have a similar effect at the former part of the distribution by setting wage floors in some sectors of activity higher than the national minimum wage. These elements of the institutional framework might be contributing to the existence of a lower gap at the bottom by imposing minimum earnings thresholds. Although the remunerations set by the minimum wage and collective agreements also affect native men, the higher concentration of immigrant men from developing countries at the lower-end of the wage distribution allows this group to profit more from the effects of these institutions.

In the second place, when Latin American and Caribbean workers are compared to other foreigners from developing countries, both raw and counterfactual wage gaps are tiny (Figure 2), suggesting that they experience quite similar difficulties in the Spanish labor market, Spanish language proficiency not meaning a significant advantage in terms of earnings. This can be linked to the fact that most immigrants are employed in low-skill jobs.

Lastly, we compare the wage gap between Latin American and Caribbean employees and foreigners from developed countries, which, as mentioned, are essentially citizens from other rich EU countries (Figure 3). The raw mean gap is quite similar to the differential found with respect to Spaniards but the counterfactual mean gap is almost twice. As in Figure 1, the counterfactual differential increases across the wage distribution and is even larger than in the comparison with natives. In fact, if we compare locals and this group of workers from developed countries we find that, other things being equal, they are paid roughly as nationals up to the 70th percentile but they receive higher wages than them at the top of the earnings distribution.[14] This pattern is consistent with the interpretation of the most skilled part of this group as expatriate workers. This result is coherent with the finding of Saint-Paul (2008), who reports the existence of a positive wage premium for European-born workers in the United States, a result probably driven by unobservable differences in the quality of education.

---

[14] The results derived from the comparison between local and foreign workers from developed countries can be directly inferred from looking at Figures 1 and 3. Nevertheless, detailed results, not included here for brevity, are available from the authors upon request.

Figure 2. Wage gaps between Latin American and Caribbean and other foreign employees from developing countries in Spain (2006)
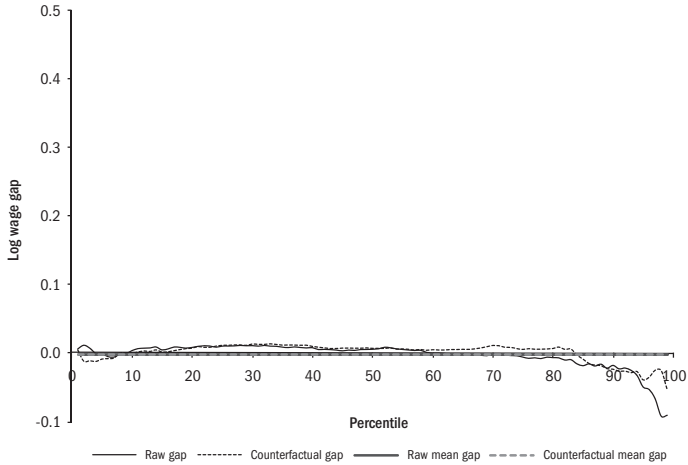
Source: authors' analysis from WSS 2006.

Figure 3. Wage gaps between Latin American and Caribbean and foreign employees from developed countries in Spain (2006)
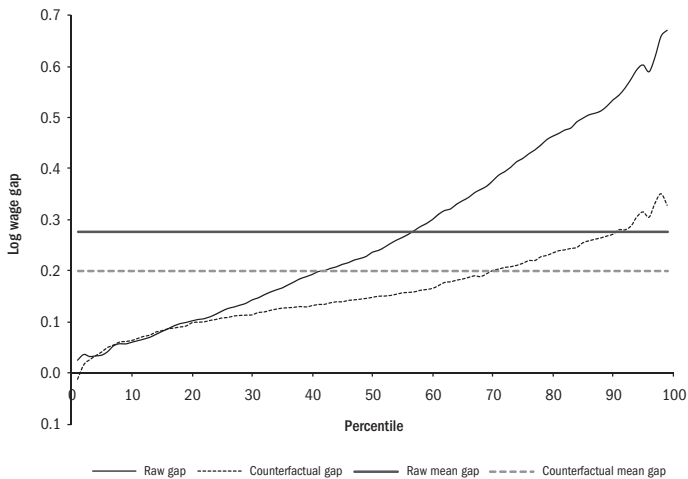
Source: authors' analysis from WSS 2006.

In order to do some robustness checks, we have repeated the analysis using hourly gross wages excluding bonuses and gross monthly wages.[15] The results reported above hold for these alternative definitions of the dependent variable, also pointing to the existing of a wage penalty with respect to nationals for Latin American and Caribbean immigrants that is not explained by human capital endowments and that increases across the earnings distribution. These results are available from the authors upon request.

V. Conclusions

Latin American and Caribbean immigration has become an increasingly important phenomenon in Spain, a country of emigrants until not so long ago. In this paper, we have analyzed the native-immigrant wage gap across the whole distribution using the M-M decomposition. The main contribution of the paper has been to address this issue for the first time using a representative survey of the employed population. In addition, standard errors for counterfactual gaps have been estimated, a task not addressed by previous research on the topic in Spain or in most other national case studies.

There are three main findings in this paper. First, the existence of an important glass ceiling for Latin Americans and Caribbeans living in Spain, that is, a wage gap that significantly grows across the earnings distribution. This pattern is consistent with the effect of labor market institutions (mainly minimum wages and collective agreements) at the bottom and the consequences of the eventually limited transferability of human capital accumulated in the country of origin and the existence of obstacles for migrants in accessing high occupational levels. Second, there are no important differences between wages earned by Latin American and Caribbean workers and other foreign employees from developing countries, which suggests that proficiency in Spanish might not be a very valuable asset in the labor market for foreigners, as long as they are employed in low-skill jobs. Finally, when compared to EU-25-born workers, Latin American and Caribbean employees face a similar earnings disadvantage when compared to locals, the gap being even larger at the top.

---

[15] It is well-documented that immigrants are usually employed in jobs involving harder tasks or worse working conditions (Orrenious and Zavodny 2009), which can contribute to the reduction of observed wage gaps if the principle of compensating differentials (at least partially) applies and detailed information on job characteristics is not available for researchers.

Appendix

Table A1. OLS and quantile regression estimates for male Spanish employees (2006)

	OLS coefficients	Coefficients of quantile regressions by percentile				
		10th	25th	50th	75th	90th
Age	0.045***	0.029***	0.033***	0.038***	0.044***	0.052***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Squared age	0.000***	0.000***	0.000***	0.000***	0.000***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (less than primary education=0)						
Primary education	0.052***	0.044***	0.044***	0.043***	0.065***	0.054***
	(0.006)	(0.008)	(0.007)	(0.007)	(0.010)	(0.014)
Lower secondary education	0.064***	0.053***	0.049***	0.056***	0.078***	0.067***
	(0.006)	(0.008)	(0.007)	(0.007)	(0.009)	(0.014)
Upper secondary education	0.218***	0.149***	0.170***	0.201***	0.250***	0.252***
	(0.006)	(0.008)	(0.007)	(0.007)	(0.010)	(0.014)
University education	0.500***	0.315***	0.397***	0.493***	0.575***	0.589***
	(0.007)	(0.008)	(0.008)	(0.007)	(0.010)	(0.015)
Tenure	0.012***	0.012***	0.012***	0.012***	0.011***	0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Table A1 (continued). OLS and quantile regression estimates for male Spanish employees (2006)

	OLS	Coefficients of quantile regressions by percentile				
	coefficients	10th	25th	50th	75th	90th
Firm size (less than 50 employees=0)						
50-199 employees	0.137***	0.110***	0.125***	0.159***	0.163***	0.135***
	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.007)
200 or more employees	0.234***	0.224***	0.250***	0.262***	0.249***	0.210***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)	(0.008)
Observations	89,694	89,694	89,694	89,694	89,694	89,694
R^2	0.356	0.165	0.206	0.240	0.222	0.197

Notes: Standard errors between parentheses. McFadden R^2 reported in quantile regressions. An intercept, eleven dummies for sector of activity of the firm and seventeen regional dummies are also included in all regressions. *** significant at 1% ** significant at 5% * significant at 10%. Source: authors' analysis from WSS 2006.

Table A2. OLS and quantile regression estimates for male Latin American and Caribbean employees (2006)

	OLS coefficients	Coefficients of quantile regressions by percentile				
		10th	25th	50th	75th	90th
Age	0.019**	0.016**	0.007	0.018**	0.020	0.014
	(0.009)	(0.007)	(0.007)	(0.008)	(0.013)	(0.018)
Squared age	0.000**	0.000**	0.000	0.000**	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (less than primary education=0)						
Primary education	0.062***	0.030*	0.034**	0.047**	0.051	0.046
	(0.020)	(0.018)	(0.018)	(0.019)	(0.031)	(0.043)
Lower secondary education	0.068***	0.007	0.037*	0.056***	0.080**	0.060
	(0.021)	(0.019)	(0.018)	(0.020)	(0.032)	(0.044)
Upper secondary education	0.096***	0.018	0.052**	0.078***	0.089**	0.077
	(0.027)	(0.022)	(0.022)	(0.023)	(0.037)	(0.052)
University education	0.313***	0.115***	0.157***	0.255***	0.374***	0.481***
	(0.041)	(0.029)	(0.028)	(0.029)	(0.046)	(0.067)
Tenure	0.027***	0.003	0.011***	0.024***	0.033***	0.061***
	(0.006)	(0.004)	(0.003)	(0.003)	(0.005)	(0.005)

Table A2 (continued). OLS and quantile regression estimates for male Latin American and Caribbean employees (2006)

	OLS	Coefficients of quantile regressions by percentile				
	coefficients	10th	25th	50th	75th	90th
Firm size (less than 50 employees=0)						
50-199 employees	0.086***	0.041***	0.039***	0.058***	0.125***	0.135***
	(0.017)	(0.015)	(0.014)	(0.015)	(0.025)	(0.035)
200 or more employees	0.258***	0.090***	0.125***	0.242***	0.346***	0.473***
	(0.025)	(0.018)	(0.018)	(0.019)	(0.031)	(0.044)
Observations	2,688	2,688	2,688	2,688	2,688	2,688
R^2	0.198	0.104	0.082	0.102	0.149	0.197

Notes: Standard errors between parentheses. McFadden R^2 reported in quantile regressions. An intercept, eleven dummies for sector of activity of the firm and seventeen regional dummies are also included in all regressions. *** significant at 1% ** significant at 5% * significant at 10%. Source: authors' analysis from WSS 2006.

Table A3. OLS and quantile regression estimates for other male foreign employees from developing countries (2006)

	OLS coefficients	Coefficients of quantile regressions by percentile				
		10th	25th	50th	75th	90th
Age	-0.002	-0.005	-0.003	0.002	0.004	0.007
	(0.008)	(0.007)	(0.007)	(0.007)	(0.011)	(0.015)
Squared age	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (less than primary education=0)						
Primary education	0.051***	0.036**	0.024	0.032**	0.056**	0.073**
	(0.015)	(0.016)	(0.015)	(0.014)	(0.023)	(0.031)
Lower secondary education	0.020	0.007	0.022	0.040***	-0.007	0.012
	(0.016)	(0.017)	(0.016)	(0.015)	(0.024)	(0.032)
Upper secondary education	0.089***	0.060**	0.067***	0.070***	0.075***	0.112**
	(0.024)	(0.023)	(0.022)	(0.020)	(0.033)	(0.046)
University education	0.258***	0.070**	0.077***	0.209***	0.310**	0.504***
	(0.048)	(0.031)	(0.030)	(0.028)	(0.046)	(0.058)
Tenure	0.017***	0.011***	0.012***	0.014***	0.023***	0.027***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)

Table A3 (continued). OLS and quantile regression estimates for other male foreign employees from developing countries (2006)

	OLS	Coefficients of quantile regressions by percentile				
	coefficients	10th	25th	50th	75th	90th
Firm size (less than 50 employees=0)						
50-199 employees	0.133***	0.067***	0.060***	0.112***	0.184***	0.223***
	(0.015)	(0.014)	(0.013)	(0.012)	(0.020)	(0.026)
200 or more employees	0.185***	0.096***	0.099***	0.155***	0.244***	0.275***
	(0.021)	(0.021)	(0.018)	(0.017)	(0.029)	(0.039)
Observations	3,552	3,552	3,552	3,552	3,552	3,552
R^2	0.145	0.090	0.062	0.067	0.114	0.145

Notes: Standard errors between parentheses. McFadden R^2 reported in quantile regressions. An intercept, eleven dummies for sector of activity of the firm and seventeen regional dummies are also included in all regressions. *** significant at 1% ** significant at 5% * significant at 10%. Source: authors' analysis from WSS 2006.

Table A4. OLS and quantile regression estimates for other male foreign employees from developed countries (2006)

	OLS coefficients	Coefficients of quantile regressions by percentile				
		10th	25th	50th	75th	90th
Age	0.067***	0.024*	0.033***	0.039***	0.051***	0.087***
	(0.012)	(0.012)	(0.012)	(0.014)	(0.016)	(0.026)
Squared age	-0.001***	0.000*	0.000***	0.000***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (less than primary education=0)						
Primary education	0.034	-0.032	0.029	0.007	0.052	0.119
	(0.032)	(0.038)	(0.035)	(0.042)	(0.050)	(0.075)
Lower secondary education	-0.017	-0.028	-0.011	-0.041	-0.001	0.077
	(0.036)	(0.042)	(0.038)	(0.044)	(0.053)	(0.079)
Upper secondary education	0.143***	0.006	0.083**	0.162***	0.174***	0.236***
	(0.041)	(0.045)	(0.040)	(0.046)	(0.055)	(0.083)
University education	0.529***	0.334***	0.406***	0.573***	0.608***	0.659***
	(0.048)	(0.050)	(0.043)	(0.049)	(0.058)	(0.090)
Tenure	0.032***	0.024***	0.025***	0.033***	0.029***	0.036***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)	(0.005)

Table A4 (continued). OLS and quantile regression estimates for other male foreign employees from developed countries (2006)

	OLS	Coefficients of quantile regressions by percentile				
	coefficients	10th	25th	50th	75th	90th
Firm size (less than 50 employees=0)						
50-199 employees	0.170***	0.147***	0.128***	0.138***	0.170***	0.234***
	(0.027)	(0.025)	(0.024)	(0.028)	(0.034)	(0.049)
200 or more employees	0.152***	0.195***	0.193***	0.180***	0.144***	0.082
	(0.033)	(0.032)	(0.029)	(0.035)	(0.043)	(0.065)
Observations	1,636	1,636	1,636	1,636	1,636	1,636
R^2	0.422	0.179	0.210	0.273	0.317	0.319

Notes: Standard errors between parentheses. McFadden R^2 reported in quantile regressions. An intercept, eleven dummies for sector of activity of the firm and seventeen regional dummies are also included in all regressions. *** significant at 1% ** significant at 5% * significant at 10%. Source: authors' analysis from WSS 2006.

References

Albrecht, James, Anders Björklund, and Susan Vroman (2003), Is there a glass ceiling in Sweden?, *Journal of Labor Economics* **21**: 145-77.

Albrecht, James, Aico van Vuuren, and Susan Vroman (2009), Counterfactual distributions with sample selection adjustments: Econometric theory and an application to the Netherlands, *Labour Economics* **16**: 383-96.

Amuedo-Dorantes, Catalina, and Sara De la Rica (2007), Labor market assimilation of recent immigrants in Spain, *British Journal of Industrial Relations* **45**: 257-284.

Arrow, Kenneth J. (1973), The theory of discrimination, in O. Ashenfelter and A. Rees, eds., *Discrimination in labor markets*, Princeton, Princeton University Press.

Barth, Eerling, and Harald Dale-Olsen (2009), Monopsonistic discrimination, worker turnover and the gender wage gap, *Labour Economics* **16**: 589-97.

Beach, Charles M., and Christopher Worswick (1993), Is there a double-negative effect on the earnings of immigrant women?, *Canadian Public Policy-Analyse de Politiques* **19**: 36-53.

Becker, Gary S. (1957), *The economics of discrimination*, Chicago, Chicago University Press.

Blinder, Alan S. (1973), Wage discrimination: reduced form and structural estimates, *Journal of Human Resources* **8**: 436-55.

Budría, Santiago, and Ana Isabel Moro (2008), Education, educational mismatch, and wage inequality: Evidence for Spain, *Economics of Education Review* **27**: 332-41.

Bosch, Mariano, María de los Ángeles Carnero, and Lidia Farré (2009), Information and discrimination in the rental housing market: Evidence from a field experiment, Working Paper 2009-21, IVIE.

Brücker, Herbert, Gil S. Epstein, Barry McCormick, Gilles Saint-Paul, Alessandra Venturini, and Klaus Zimmermann (2002), Welfare state provision, in T. Boeri, G.H. Hanson and B. McCormick, eds., *Immigration policy and the welfare system*, London, Oxford University Press.

Burdett, Kenneth, and Dale T. Mortensen (1998), Wage differentials, employer size, and unemployment, *International Economic Review* **39**: 257-73.

Canal-Domínguez, Juan Francisco, and César Rodríguez-Gutiérrez (2008), Analysis of wage differences between native and immigrant workers in Spain, *Spanish Economic Review* **10**: 109-34.

Carrasco, Raquel, Juan Francisco Jimeno, and Carolina Ortega (2008), The effect of immigration on labor market performance of native-born workers: Some evidence for Spain, *Journal of Population Economics* **21**: 627-48.

Centro de Investigaciones Sociológicas (CIS) (2003), Barómetro de noviembre, Estudio 2545, Madrid, CIS.

Centro de Investigaciones Sociológicas (CIS) (2006), Barómetro de septiembre, Estudio 2654, Madrid, CIS.

Chiswick, Barry, and Paul W. Miller (2008), Why is the payoff to schooling smaller for immigrants, *Labour Economics* **15**: 1317-40.

Chiswick, Barry, and Paul W. Miller (2009), The international transferability of immigrants' human capital, *Economics of Education Review* **28**: 162-69.

Chiswick, Barry, Anh T. Le, and Paul W. Miller (2008), How immigrants fare across the earnings distribution in Australia and the United States, *Industrial and Labor Relations Review* **61**: 353-73.

De la Rica, Sara, Juan José Dolado, and Vanesa Llorens (2008), Ceilings or floors? Gender wage gaps by education in Spain, *Journal of Population Economics* **21**: 751-76.

DiNardo, John, Nichole M. Fortin, and Thomas Lemieux (1996), Labor market institutions and the distribution of wages, 1973-1992: A semiparametric approach, *Econometrica* **64**: 1001-44.

Dolado, Juan José, Juan Francisco Jimeno, and Rosa Duce (1997), Los efectos de la inmigración sobre la demanda de trabajo cualificado vs. Poco cualificado: evidencia para España, *Cuadernos Económicos del ICE* **64**: 11-29.

European Commission (2009), Discrimination in the EU in 2009, Report 317, European Commission. Available at http://ec.europa.eu/public_opinion/archives/eb_special_en.htm [last accessed: May 29, 2010].

Eurostat (2006), Non-national populations in the EU Member States, *Statistics in focus* 8/2006.

Fernández, Cristina, and Carolina Ortega (2008), Labor market assimilation of immigrants in Spain: Employment at the expense of bad job-matches, *Spanish Economic Review* **10**: 83-107.

Gammage, Sarah, and John Schmitt (2004): Los inmigrantes mexicanos, salvadoreños y dominicanos en el mercado laboral estadounidense: Las brechas de género en los años 1990 y 2000, Series Estudios y Prospectivas 20, Mexico, CEPAL.

Gardeazábal, Javier, and Arantza Ugidos (2005), Gender discrimination at quantiles, *Journal of Population Economics* **18**: 165 -179.

Hammarstedt, Mats, and Ghazi Shukur (2006), Immigrants' relative earnings in Sweden -a cohort analysis, *Labour* **20**: 285-323.

Hammarstedt, Mats, and Ghazi Shukur (2007), Immigrants' relative earnings in Sweden -a quantile regression approach, *International Journal of Manpower* **28**: 456-73.

Hotchkiss, Julie L., and Myriam Quispe-Agnoli (2009), Employer monopsony power in the labor market for undocumented workers, Working Paper 14, Federal Reserve Bank of Atlanta.

Hunt, Priscillia (2008), Are immigrants so stuck to the floor that the ceiling is irrelevant?, Research Paper 838, Department of Economics, University of Warwick.

Kim, Marlene (2002), Has the race penalty for black women disappeared?, *Feminist Economics* **8**: 115-24.

Koenker, Roger (2005), *Quantile regression*, Cambridge, Cambridge University Press.

Machado, José A.F., and José Mata (2005), Counterfactual decomposition of changes in wage distributions using quantile regresión, *Journal of Applied Econometrics* **20**: 445-65.

Maddison, Angus (2001), *The world economy: A millennial perspective*, Paris, OECD.

Manning, Alan (2003), *Monopsony in motion: Imperfect competition in labor mark*ets, Princeton, Princeton University Press.

Melly, Blaise (2006), Decomposition of differences in distribution using quantile regression, *Labour Economics* **12**: 577-90.

Oaxaca, Ronald L. (1973), Male-female wage differentials in urban labor markets, *International Economic Review* **14**: 673-709.

Orrenious, Pia M., and Madeline Zavodny (2009), Do immigrants work in riskier job?, Working Paper 901, Federal Reserve Bank of Dallas.

Phelps, Edmund S. (1972), The statistical theory of racism and sexism, *American Economic Review* **62**: 659-61.

Raphael, Steven, and David A. Riker (1999), Geographic mobility, race, and wage differentials, *Journal of Urban Economics* **45**: 17-46.

Rivera-Batiz, Francisco L. (2007), How do migrants from Latin America and the Caribbean fare in the US labour market?, *World Economy* **30**: 1399-429.

Robinson, Joan V. (1933), *The economics of imperfect competition*, London, MacMillan.

Saint-Paul, Gilles (2008), Brain drain: Some evidence from European expatriates in the United States, *CESifo Forum* **3**: 19-27.

Sanromá, Esteban, Raúl Ramos, and Hipólito Simón (2009), Immigrant wages in the Spanish labour market. Does the origin of human capital matter?, Discussion Paper 4157, Institute for the Study of Labor.

Shamsuddin, Abul F.M. (1998), The double negative effect on the earnings of foreign-born females in Canada, *Applied Economics* **30**: 1187-201.

Silverman, Bernard W. (1986), *Density estimation*, London, Chapman and Hall.

Simón, Hipólito, Esteban Sanromà, and Raúl Ramos (2008), Labour segregation and immigrant and native-born wage distributions in Spain: An analysis using matched employer-employee data, *Spanish Economic Review* **10**: 135-68.