IZA DP No. 5571

## Wage Differentials between Native and Immigrant Women in Spain: Accounting for Differences in the Supports

Catia Nicodemo Raúl Ramos

March 2011

Forschungsinstitut zur Zukunft der Arbeit Institute for the Study of Labor

## Wage Differentials between Native and Immigrant Women in Spain: Accounting for Differences in the Supports

### **Catia Nicodemo**

Universitat Autònoma de Barcelona and IZA

#### Raúl Ramos

AQR-IREA, Universitat de Barcelona and IZA

Discussion Paper No. 5571 March 2011

IZA

P.O. Box 7240 53072 Bonn Germany

Phone: +49-228-3894-0 Fax: +49-228-3894-180 E-mail: iza@iza.org

Any opinions expressed here are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but the institute itself takes no institutional policy positions.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit organization supported by Deutsche Post Foundation. The center is associated with the University of Bonn and offers a stimulating research environment through its international network, workshops and conferences, data service, project support, research visits and doctoral program. IZA engages in (i) original and internationally competitive research in all fields of labor economics, (ii) development of policy concepts, and (iii) dissemination of research results and concepts to the interested public.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

IZA Discussion Paper No. 5571 March 2011

## ABSTRACT

## Wage Differentials between Native and Immigrant Women in Spain: Accounting for Differences in the Supports<sup>\*</sup>

The objective of the study is to quantify the wage gap between native and immigrant women in Spain taking into account differences in their characteristics and the need to control for common support. Using the microdata from the Social Security Records (MCVL) and with a matching procedure of Nopo (2008) we analysed the decomposition of the wage gap. The advantage of this procedure is that we can simultaneously estimate the common support and the mean counterfactual wage for the women on the common support. In addition, we can describe not only differences at the mean, but along the entire wage distribution. The results obtained indicate that, on average, immigrants women earn less than native in the Spanish labour market. This wage gap is bigger when we analyse the developing countries, but our main finding is that part of this wage gap is related to difference in common supports, i.e. immigrant women have different characteristics than native women that make them less attractive in the labour market. If the need to control for common support is neglected, estimates of the wage gap will be biased.

JEL Classification: J16, J31, C2, C3

Keywords: common support, quantile regression, immigration, counterfactual decomposition

Corresponding author:

Catia Nicodemo Universitat Autonoma de Barcelona Department of Applied Economics Campus Bellaterra 08193 Bellaterra (Cerdanyola) Spain E-mail: catia.nicodemo@uab.cat

Catia Nicodemo would like to thank the Fundación Ramon Arecess for their support. Raúl Ramos would like to express his gratitude for the support received from Spain's Ministerio de Ciencia e Innovación (VI Plan Nacional de Investigación Científica, Desarrollo e Innovación Tecnológica 2008-2011) through the action ECO2010-16006.

## WAGE DIFFERENTIALS BETWEEN NATIVE AND IMMIGRANT WOMEN IN SPAIN: ACCOUNTING FOR DIFFERENCES IN THE SUPPORTS

#### 1. Introduction and objectives

The relative situation of immigrants in the labour market of the host country has been extensively analysed in recent studies. These different studies have put special attention on immigrant wages in relation to native-born workers and their findings can be summarised as follows: first, immigrants typically face a significant wage gap in relative to native workers and, second, that the gap tends to diminish the longer they remain in the host country [1].

In a similar way, the existence of significant wage differences between men and women has also been detected in several studies [2]. However, the number of studies considering the particular case of immigrant women is relatively scarce.

Long (1980) was the first study to analyse the specific situation of immigrant women in the United States. His results show quite different results to the ones obtained by Chiswick (1978) for the case of immigrant men and that have been previously summarised: an initial negative wage gap for immigrant that reduces with years of residence in the host country. In particular, he found that wages of immigrant women were higher than that of native women conditional on their characteristics.

Following a similar approach, Beach and Worswick (1993) examined the situation of immigrant women in the Canadian labour market using data from the 1973 Job Mobility Survey. Their results show that while wages of immigrant women were not significantly different from native women, highly educated immigrant women earn less than their native counterparts.

Taking the evidence found by Beach and Worswick (1993) for educated immigrant women as a starting point, other authors have investigated whether there is a double-negative effect on

the wages of immigrant women stemming from a negative effect from both gender and foreign country of origin [3]. This double disadvantage could arise from an environment of unequal opportunity in the labour market, which negatively affects both women and migrants. According to this hypothesis, women migrants will have more difficulties integrating into the labour market than both native-born women and migrant men. According to Rubin et al. (2008, p. 45) "Migrant women, in a sense, face a double battle; first to migrate and integrate as foreign-born people in their host country, and then to overcome the gender bias in the labour market"

One of the first contributions adopting this perspective is Shamsuddin (1998). This author applied a decomposition approach to study the possible presence of a double-negative effect on the wages of immigrant women using more recent data for Canada than Beach and Worswick (1993). He concludes that all foreign-born women suffer from double-negative discrimination and, that in fact, gender discrimination seems to be more relevant than discrimination by birthplace. However, based on a Danish panel of register data, Nielsen et al (2000) also found that all women were affected by a substantial gender discrimination in wages, but only Pakistani women experienced a double-negative effect. On the opposite, Hayfron (2002) using data for Norway finds evidence of a double negative effect on female immigrant earnings.

Adserà and Chiswick (2007) used the 1994–2000 waves of the European Community Household Panel to study the earnings of immigrants as compared to native workers in 15 European countries. At the time of arrival, they found a significant negative effect of foreign birth on individual earnings compared to the native born in the destination of around 40%. These differences varied across origins and destinations and by gender, but they do not find clear evidence of double discrimination.

Rehbuhn (2009) analysed gender differences in earnings among the foreign-born in Israel and how these differences vary by origin countries. Results from the Israel 1995 population census indicates that, everything else being equal, immigrants, including immigrant women, out-earn native-born men. The effect of tenure, by single year, shows that immigrant men and immigrant women follow very similar trajectories but the latter achieve similarity to nativeborn men much sooner. A detailed analysis reveals important heterogeneity by country of birth. All the immigrant women who out-earned native men and native women originated in America or Europe. By contrast, all immigrant women who are at a disadvantage relative to native-born men are from Asia or Africa. The most common pattern, in which immigrant women earn as much as native-born men do but out-earn native-born women are related to three different factors: absorption climate, immigration motivation, and socio-cultural norms. His results also highlighted the relevance of considering heterogeneity when analysing double discrimination among immigrant women.

Le and Miller (2010) used 1990 and 2000 US Census data to analyse wage differentials for three groups of workers: the native born, immigrants from English-speaking countries and immigrants from non-English-speaking countries. Quantile regression estimates revealed that females have lower rates of pay across the entire wage scale, but immigrant women from non-English-speaking countries are the only ones experiencing a double disadvantage effect.

Summarising, the literature analyzing wage differentials between native and immigrant women has focused on the analysis of whether there is or not a double discrimination of immigrant women. These studies have concluded that some groups of women immigrants experience a double wage penalization: first, they suffer discrimination versus native people, and, second they have less advantage in the labour market with respect to immigrant men.

The Spanish case is particularly interesting from this perspective for two reasons: first, because the literature on wage discrimination of immigrant women is practically inexistent [4] and, second, because women account more than half than recent immigration to Spain coming from a wide variety of countries in terms of the level of development, language and cultural proximity to Spaniards. In fact, while the number of total migrants has been decreasing in the last years, the number of women migrating to Spain for work has risen sharply, partly due to increasing demand for workers to do jobs with low pay and prestige, in sectors (such as domestic service) where most of the workforce is female.

The only work to our knowledge that has explicitly focused on the situation of immigrant women in the Spanish labour market is Antón et al. (2010b). They analyse the differential access to employment and the earnings penalty faced by immigrant women when compared to natives using data from the Labour Force Survey and the Wage Structure Survey for 2006. Their results support the hypothesis of double discrimination, and regarding our central issue, wage differentials between native and immigrant women, they found that the earnings gap

between female natives and migrants, which amounts to roughly 20 percent, practically disappears on average when controlling for observable characteristics. However, these results do not take into account the relevance of considering "differences in the supports". This aspect is relevant because immigrants can have very different observable characteristics related to natives and if this is the case, there will be a problem of comparability between the two groups. As migrant females tend to concentrate in certain occupations, while native females or men do not work in these occupations, traditional wage decomposition will fail to recognize these differences in the supports and will provided a biased picture of the magnitude of the wage gap, but also of their origins.

Taking all this into account, this paper reviews the position of immigrant women, drawing on recent research about the labour market situation of female immigrants in Spain. Our objective is to understand the disadvantage in relation to native workers but also between and within them. From a methodological point of view, we decompose the wage gap using a matching procedure along the lines of Ñopo (2008). The advantage of this procedure is that we can simultaneously estimate the common support and the mean counterfactual wage for the women on the common support (i.e., a similar group of natives and immigrants). In addition, the decomposition of the wage gap explicitly accounts for differences in the supports of the distributions of characteristics. Lastly, this matching method provides useful information on the unexplained wage gap not only at the mean, but also on the distribution of this gap over the entire wage distribution. This is also a novelty in the related literature.

Our results show that immigrant women earn less than natives and this wage gap is related to the unexplained wage component but also to differences in common supports. In particular, most of the characteristics that native women have and immigrants have not are better rewarded in the labour market.

The rest of the paper is structured in three different sections. First, the data sources and variables used in our analysed are described and some preliminary statistics are provided in order to better explain the peculiarities of the Spanish case. Next, the third section presents the applied methodology and the obtained results for the analysis of wage differentials for different groups of immigrant women. Last, the paper concludes summarising the main results and implications of our analysis.

#### 2. Data sources and descriptive analysis

To draw our study we use the *Muestra Continua de Vidas Laborales* (Continuous Sample of Working Histories - MCVL from now on) for 2008. These data represent more than 1 million of people related with the Social Security System in Spain. The MCVL started in 2004 and workers are a random sample of those affiliated to the Social Security in the year when the survey was extracted, and reproduces the labour history of the affiliated starting from their first job.

The MCVL is an appropriate database to study the labour market in Spain and, in fact, it has several advantages when compared to the Labour Force Survey (LFS) or the Wage Structure Survey (WSS) because it provides more exhaustive information on the labour trajectory of workers. The data set gives information of all the historical relationships of any individual with the Social Security System (in terms of work and unemployment benefits). We also have information with respect to the type of contract, sector of activity, qualification and the earnings that every month an individual must pay to the Social Security System, date when entering or going out of the job market, par-time or full-time and firm size. Moreover, it contains information on gender, nationality, residence and date of birth and level of education.

In order to analyse the wage gap between immigrant and native workers, we use the hourly wage, calculated as the ratio between annual earnings divided by days worked during the year 2008. We have eliminated observations when the daily earnings are below the minimum base or exceed the maximum base (Social Security System has imposed the minimum base in 2008 around 500 euros per month, and maximum at 2800 euros) or if they have worked for less than 30 days and we take into consideration when the worker has more than one job.

In figure 1 we report the kernel density of the daily wage between native and immigrants in 2008 also distinguishing between men and women. As we can see, there are clear differences between the four considered groups. Native men are the one with a higher concentration in higher wages followed by native women, while immigrants are concentrated in low-pay occupations. The situation of immigrant women is clearly the worst, confirming the "double disadvantage" hypothesis.

#### FIGURE 1

If we look at wage differentials between women according to their country of birth, the distribution of daily wage between native and immigrant women is shown in figure 2, while figures 3 and 4 show the situation of immigrant women from developed and developing countries [5] when compared to native women, respectively. We can see how the gap is bigger for women from developing countries while it is smaller and, even, negative for women from developed countries.

#### FIGURES 2, 3 AND 4

Table 1 complements the previous descriptive analysis. In particular, we report the daily absolute wage gap and the percentage of foreign women with respect to native women (i.e, the percentual wage difference between native and immigrants in terms of native: (W<sup>N</sup>- $W^M$ )/ $W^N$ ) and descriptive statistics for observed characteristics. As we can see from this table, the daily wage for native women is a 15.52% higher than the daily wage for immigrant women, while the gap is significantly lower for immigrant women from developed countries (2.51%) and higher for immigrant women from developing countries (17.07%). There are also significant differences in term of observable characteristics between these three groups. Immigrant women from developing countries are more concentrated in lower educational levels, low qualified occupation, in some services sectors such as hotels and restaurants and in smaller firms than native women or immigrant women from developed countries. For all immigrant women, experience is significantly lower and, in fact, this variable can also be treated as a proxy of the number of years of residence in Spain. As previously mentioned, these observable differences should be taken into account in order to establish a group of native workers with similar characteristics to natives in order to decompose the wage gap in a proper way. This is what we do in the following section.

#### TABLE 1

#### 3. Methodology and results

Different decomposition methods have been proposed to account for the explained and unexplained components of the wage gap. The most popular method is based on a parametric approach. Following Blinder (1973) and Oaxaca (1973), thereafter BO, separate wage functions are estimated for males and females take into consideration the characterizations (see Mincer, 1974). The difference in average wages between men (M) and female (F) can be decomposed into differences in personal characteristics (endowment effect) and differences in returns (remuneration effect):

$$\underbrace{\Delta \ln W}_{\text{Raw wage gap}} = \underbrace{\beta^{M} \cdot \left(\overline{X}^{M} - \overline{X}^{F}\right)}_{\text{Endowment}} + \underbrace{\left(\overline{\beta}^{M} - \overline{\beta}^{F}\right) \cdot \overline{X}^{M}}_{\text{Remuneration}}$$
(1)

Junh et al. (1993) -JMP from now onwards- extend the method proposed by BO trying to account for the unobserved heterogeneity. However, both methods, BO and JMP, estimate the average of unexplained difference in pay but not its distribution. Different solutions have been proposed in the literature. Buchinsky (1994) overcomes this limitation by estimating the quintile earning equations. DiNardo et al. (1996) used a semi-parametric model to explore the distribution of unexplained differences while Donald et al. (2000) suggested a different semiparametric approach. A different approach was proposed by Barsky et al. (2001), who suggested including only one explanatory variable (income) to avoid the problem of dimensionality in non parametric estimation. They recognized for the first time the importance of "differences in the supports" and restricted the comparison to the common support. This aspect is relevant because there are combinations of individual characteristics for which it is possible to find individuals from one of the groups, but not for the other. This problem of comparability is accentuated when job characteristics are included in the explanation of the wage gap. As migrant females tend to concentrate in certain occupations, while native females or men do not work in these occupations, the traditional BO decomposition will fail to recognize these differences in the supports and, moreover, this decomposition is informative only about the average unexplained difference in wages, not about the distribution of these unexplained differences.

Following this idea, Nopo (2008) adapted a tool of the program evaluation literature, matching, to fix this problem. The main advantage of this procedure is that provides additional information about the distribution of the differences in wages that remain unexplained by the characteristics of the individuals after the decomposition, without requiring any estimation of earnings equations and hence, no validity-out-of-the-support assumptions. In this study we follow the Nopo (2008) method and we propose to consider

*immigration difference in the supports.* In the analysed sample there are some combinations of characteristics that are typical for native but not for immigrants and vice versa (schooling level, language, culture, etc.). We propose to decompose the wage gap among natives and immigrant women taking account the differences in the distributions of individual characteristics and in particular for immigrants' differences in supports. In particular, the proposed approach is to consider the country of birth as a treatment and use a matching procedure to select sub-samples of natives and immigrant women such that there are no differences in observable characteristics between the matched groups.

In order to illustrate the methodology that we use to decompose the wage gap among immigrants and native women, suppose that there are two different groups: natives (N) and immigrants (M) and that we decompose wage differences between the two groups applying the matching procedure in the following way:

First, as shown in (2) and (3), we calculate the expected value of earning conditional on the characteristics of two groups:

$$E[Y \mid L] = \int g^{N}(x) dF^{N}(x)$$
<sup>(2)</sup>

$$E[Y \mid A] = \int g^{M}(x) dF^{M}(x)$$
(3)

and, next, we decompose the difference in terms of observed wages and the respective counterfactuals as shown in (4) and (5)

$$\Delta = \int_{S^{N}} g^{N}(x) dF^{N}(x) + \int_{S^{M}} g^{N}(x) dF^{N}(x)$$
(4)

$$\Delta = \left| \int_{\overline{S^{M}} \cap S^{N}} g^{N}(x) dF^{N}(x) + \int_{S^{N} \cap S^{M}} g^{N}(x) dF^{N}(x) \right| - \left[ \int_{S^{N} \cap S^{M}} g^{M}(x) dF^{M}(x) + \int_{S^{M} \cap \overline{S}^{N}} g^{M}(x) dF^{M}(x) \right]$$
(5)

The expression in (5) can be understood as four additive components of the total wage difference (see Ñopo, 2008 for more details):

$$\Delta = \Delta_M + \Delta_N + \Delta_X + \Delta_0 \tag{6}$$

where:

- $\Delta_N$  is the part of the wage gap that can be explained by differences between two groups of native women, those who have characteristics that can be matched to immigrants' characteristics and those who do not.
- Δ<sub>M</sub> is the part of the wage gap that can be explained by differences between two groups of immigrant women, those who have characteristics that can be matched to native characteristics and those who do not.
- $\Delta_X$  is the part of the wage gap that can be explained by differences in the distribution of individual characteristics of native and immigrant women over common support.
- $\Delta_0$  is the unexplained part in BO:  $(\beta^N \beta^M) \cdot X^M$ . This difference is attributed to the unobservable characteristics and/or to discrimination between native and immigrant women.

In order to calculate these four terms, we consider the following variables that are perfectible matching among the considered groups in order to identify individuals with similar characteristics to our treatment group. In particular, we will use four different sets of characteristics x in order to check the relative importance of each of them, but also as a robustness check of our results. The first group of variables only include the age and the schooling level, next, we include the age and the occupation; the third set of variables include the age, the schooling level and the number of children; and, last, we include the age, the schooling level, the number of children, the activity sector, the occupation and the firm size. Of course, when the number of characteristics is increased, the probability of finding a perfect matching decreases. The applied matching procedure was carried out as follows: first, we select one immigrant woman from the sample (without replacement); next, we select all native women that have the same characteristics x as the immigrant woman selected before; Third, we construct a synthetic sample with all individuals that enter in this match and then,

we calculate their average wage, and match it with the original immigrant who was used to create the sample of matched natives. This algorithm is repeated until for each individual in the immigrant women sample.

If we look at the results of the wage gap decomposition among natives and immigrants women in 2008 in Spain we find that native women earn in average 3.7% more than immigrants, and in particular the wage gap ( $\Delta$ ) is 4.08% with respect to developing countries and just 0.78% with respect to developed countries, confirming that developed countries are pretty assimilated and more similar to native people. We use different sets of variables to calculate the wage gap; in particular we define four sets of variables:

- Set1: Age, schooling;
- Set2: Age, occupation [7];
- Set3: Age, occupation, number of children;
- Set 4: Age, occupation, number of children, experience;
- Set5: Age, schooling, number of children, experience, sector, occupation, firm size.

In Figures 5, 6 and 7 we show the decomposition of the wage gap after matching the different sets of characteristics for total immigrants and for immigrants from developed and developing countries versus native females.  $\Delta_0$  and  $\Delta_x$  are the components that mostly explain the wage gap. As we can see, when we control for a reduced number of variables (sets 1, 2 and 3) the most important component of the wage gap is due to the unexplained part ( $\Delta_0$ ) in all comparisons. The difference in individuals' characteristics on the common supports ( $\Delta_x$ ) also represents a big part, but just between immigrants that come from developing countries. However, for immigrants coming from developed countries, the effect is negative which implies that women from developed countries have the same or better characteristics than native. This implies that they should receive even lower wages than the ones observed [6]. When we use more characteristics (sets 3 and 4), we can observe that, as expected, the unexplained part ( $\Delta_0$ ) decreases and becomes negative. This cannot be interpreted as a "reverse" discrimination effect but it is probably related to a "selection at entry effect" (i.e. segregation). Moreover, as we use more variables in the matching, we can see how the other two components ( $\Delta_N$  and  $\Delta_M$ ) increase its explanatory power of the wage gap due to difference in the supports. Both components are positive and in particular  $\Delta_N$  explains a large part of the wage gap. This is an interesting result as it shows that the wage gap between native and immigrants is related to unobservable characteristics, but also by differences in characteristics that are better rewarded in the labour market for native than for immigrants.

#### FIGURES 5, 6 AND 7

Next, we focus on the analysis of the quantile distribution of unexplained differences in pay  $(\Delta_0)$ . In table 2, we present the values of  $\Delta_0$  for the 3 groups of considered workers: total immigrants, immigrants from developing countries and immigrants from developed countries. We also present the percentage of immigrants and native women that remain unmatched when we use the sample of total immigrants for the different sets of combinations of characteristics. As we can see from this table as we increase the number of controls, it is much more difficult to establish an appropriate group of native and immigrant women for the comparison. In fact, these difficulties to carry out a good matching are a clear sign of the magnitude of the bias incurred if differences in the support are not taken into account.

#### TABLE 2

Last, figures 8, 9 and 10 show the unexplained wage gap ( $\Lambda_0$ ) by quantiles. The left panel of these figures represent the wage gap that remains after matching in absolute terms. As we can see from these figures, for quantiles below 60<sup>th</sup> wage differences between native and immigrants are relative small, but they clearly increase at the top of distribution. It seems that at the bottom of distribution there is a sort of positive discrimination, in the sense that immigrants with low skills have better returns than native workers with similar skills. However, at the top of distribution the unexplained wage gap is clearly positive, although this effect is mitigated when we look at immigrants from developed countries (in particular, for sets 4 and 5, the unexplained wage gap, that it is equal to the wage differences between native and immigrants in terms of native (( $W^N-W^M$ )/ $W^N$ ). As we can see the relative wage gap decreases due to the fact that the wage of native is bigger than the wage of immigrants, making the odds decrease, although the difference still remains bigger at the top of wage gap distribution.

#### FIGURES 8, 9 AND 10

#### 4. Final remarks

Our objective was to analyse wage differentials between native and immigrant women using a nonparametric technique to decompose the wage gap taking into account not only the explained and unexplained components but also considering the problem of the differences in the supports (i.e., not all immigrants are comparable to all native). If differences in the common supports are not taking into account, the unexplained wage gap will be overestimated. After taking this into account, our results showed that immigrant women earn less than natives and this wage gap is related to the unexplained wage component but also to differences in common supports. In particular, most of the characteristics that native women have and immigrants have not are better rewarded in the labour market.

The considered method has also an advantage in the estimation of female wage decomposition, because it is based on the matching between observable individuals and, as a result, does not need to account for selection bias such as in other decomposition method such as BO. Moreover, using matching techniques it is also possible to look at the unexplained wage gap along the whole distribution. This is not possible with simple regression methods that are just based on the average. Exploring the unexplained wage gap along the whole distribution, we have also found that the wage differences are bigger at the top quantiles, while at the bottom distributions, unexplained wage gap does not contribute too much to explain the difference among native and immigrant women. We have also observed that the wage gap is bigger for immigrant from developing countries, but quite small or inexistent for those coming from developed countries.

#### **5. References**

- Adserà, A., Chiswick, B. R. (2007), "Are there gender and country of origin differences in immigrant labor market outcomes across European destinations?", *Journal of Population Economics*, 20 (3), pp. 495-526.
- Antón, J.-I., Muñoz de Bustillo, R., Carrera, M. (2010a), "From guests to hosts: immigrant-native wage differentials in Spain", *International Journal of Manpower*, 31 (6), 645-659.
- Antón, J.-I., Muñoz de Bustillo, R., Carrera, M. (2010b), *Raining stones? Female immigrants in the Spanish Labor Market*, MPRA Paper 20582.
- Barsky, R., Bound, J. Charles, K. Lupton, J. (2002). "Accounting for the Black-White Wealth Gap: A Nonparametric Approach", *Journal of the American Statistical Association*, 97, pp. 663-673.
- Beach, C. M., Worswick, C. (1993), "Is there a double negative effect on the earnings of immigrant women?", *Canadian Public Policy – Analyse de Politiques*, XIX (1), pp. 36-53.
- Blinder, A. S. (1973), "Wage Discrimination: Reduced Form and Structural Estimates", *Journal of Human Resources* 8 (4), pp. 436-455.
- Buchinsky, M. (1994), "Changes in the U.S. Wage Structure 1963-1987: Application of Quantile Regression", *Econometrica*. 62, pp. 405-458.
- Card, D. (2005), "Is the new immigration really so bad?", Economic Journal, 115, pp. F300-F323.
- DiNardo, J., Fortin, N. M., Lemieux, T. (1996), "Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach", Econometrica, 64 (5), pp. 1001-1044.
- Donald, S., Green, D., Paarsh, H. (2000). "Differences in Wage Distributions between Canada and the United States: An Application of a Flexible Estimator of Distribution Functions in the Presence of Covariates." *Review of Economic Studies*, 67, pp. 609-633.
- García Perez, J.I. (2007), "La Muestra Continua de Vidas Laborales (MCVL): una guía de uso para el análisis de transiciones". *Revista de Economía Aplicada*, XVI, p. 5–28.
- Hayfron, J. E. (2002), "Panel estimates of the earnings gap in Norway: do female immigrants experience a double earnings penalty?", *Applied Economics*, 34 (11), pp. 1441-1452.
- Juhn, C.. Murphy, K., Pierce, B. (1993), "Wage inequality and the rise in returns to skill", *Journal of Political Economy*, 101 (31), pp. 410-442.
- Lacuesta, A., Izquierdo, M., Vegas, R. (2009), "Assimilation of Immigrants in Spain: A Longitudinal Analysis", *Labour Economics*, 16, pp. 669-678.
- Le, A., Miller, P. (2010), "Glass ceiling and double disadvantage effects: women in the US labour market", *Applied Economics*, 42 (5), pp. 603-613.
- Long, J. E. (1980), "The Effect on Americanization on Earnings: Some Evidence for Women", Journal of Political Economy, 88, pp. 620-629.
- Mincer, J. (1974), Schooling, experience and earnings, Columbia University Press, New York.
- Nicodemo C. (2010), *Heterogeneity across Immigrants in the Spanish Labour Market: Advantage and* Disadvantage, UAB Working Paper.

- Nielsen, H. S., Rosholm, M., Smith, N. (2000), *Hit Twice? Danish Evidence on the Double-Negative Effect on the Wages of Immigrant Women*, CEPR DP 2502.
- Nopo, H. (2008), "Matching as a Tool to Decompose Wage Gaps", *The Review of Economics and Statistics*, 90 (2), pp. 290-299.
- Oaxaca, R. L. (1973), "Male-Female Wage Differentials in Urban Labor Markets", International Economic Review 14 (3), pp. 673-709.
- Rebhun, U. (2008), "A Double Disadvantage? Immigration, Gender, and Employment Status in Israel", *European Journal of Population/Revue européenne de Démographie*, 24 (1), pp. 87-113.
- Rebhun, U. (2009), "Immigration, Gender, and Earnings in Israel", European Journal of Population/Revue européenne de Démographie, 26 (1), pp. 73-97.
- Rendall, M. S., Tsang, F., Rubin, J. K., Rabinovich, L., Janta, B. (2010), "Contrasting Trajectories of Labor-Market Integration Between Migrant Women in Western and Southern Europe", *European Journal of Population/Revue européenne de Démographie*, 26 (4), pp. 383-410.
- Rubin, J., Rendall, M. S., Rabinovich, L., Tsang, F, van Oranje-Nassau, C., Janta, B. (2008), *Migrant women in the European labour force. Current situation and future prospects*, RAND Technical report.
- Shamsuddin, A. F. M. (1998), "The double-negative effect on the earnings of foreign-born females in Canada", *Applied Economics*, 30, 1187-1201.
- Simón, H., Sanromá, E., Ramos, R, (2008), "Labour segregation and immigrant and native-born wage distributions in Spain: an analysis using matched employer–employee data", *Spanish Economic Review*, 10 (2), pp. 135-168.
- Stanley, T. D., Barrell, S. B. (1998), "Gender wage discrimination bias? A meta-regression analysis", *Journal of Human Resources*, 33 (4), pp. 947-973.
- Weichselbaumer, D., Winter-Ebmer, R. (2005), "A Meta-Analysis of the International Gender Wage Gap", Journal of Economic Surveys, 19 (3), pp. 479–511.

#### 6. Endnotes

- [1] See Card (2005) for a survey.
- [2] Stanley and Barrell (1998) and Weichselbaumer and Winter-Ebmer (2005) have shown using metaanalytic techniques that these differences are robust to the consideration of different data sets, methodologies, countries and time periods.
- [3] Other studies such as Rehbuhn (2008) or Rendall et al. (2010) have focused on the analysis of double discrimination of immigrant women in employment probabilities, an issue that we will not consider here. While Rebuhn (1998) founds evidence of a positive discrimination for some groups of particular immigrant women using data for Israel, Rendall et al. (2010) compared labour-force participation rate gaps between migrant and native-born women in nine European countries, and examine how these gaps change with migrant women's additional years in the receiving country. Their results are mixed: while they found that in "old" migrant-receiving countries of Western Europe the assimilation hypothesis holds (participation rates between migrant and native-born women converge), in the "new" migrant-receiving countries of migrant women at all durations of residence are similar to those of native-born women.
- [4] Simón et al. (2008), Izquierdo et al. (2009) and Antón et al. (2010a) have analysed wage differences among native-born workers and immigrant in Spain but the role of gender was not central to their research.
- [5] We consider Germany, Italy, Portugal, UK, Rest of EU15, USA and Canada as "developed countries". We have excluded "France" from the analysis because in the MCVL immigrants from Guadalupe, Reunion, Polynesia, and Mayetta are also included in this category although the characteristics of their origin region are very different. The rest of counties shown in table1 are included in the "developing countries" category..
- [6] A similar result was found by Nicodemo (2010).
- [7] In sets 2, 3 and 4, schooling has been replaced by occupation, as the information about education in the MCVL is not updated regularly but related to the educational level at the moment of the first labour contract. For this reason, and as suggested by García-Pérez (2007), in this database the occupation could be a better proxy of qualification than the schooling level for some individuals.

## 7. Tables and figures

	Native women -	Immigrant women				
	i tuti ve women	All	Developed countries	Developing countrie		
Age	36.18	35.21	36.46	34.98		
Number of Kids	1.24	2.02	1.33	2.15		
Schooling						
Less than Primary Education	0.02	0.02	0.01	0.03		
Primary Education	0.22	0.25	0.18	0.26		
Secondary Education	0.65	0.64	0.67	0.63		
Tertiary Education	0.12	0.09	0.13	0.08		
Experience	12.60	5.08	8.28	4.33		
Occupation						
High Qualified	0.14	0.05	0.14	0.04		
Middle Qualified	0.05	0.04	0.06	0.03		
Low Qualified	0.81	0.91	0.80	0.93		
Sector						
Agriculture	0.00	0.00	0.00	0.00		
Manufacturing	0.10	0.09	0.06	0.10		
Building	0.02	0.02	0.01	0.02		
Retail	0.15	0.15	0.12	0.15		
Hotels and Rest.	0.07	0.19	0.14	0.20		
Transportation	0.02	0.02	0.05	0.02		
Finance	0.03	0.02	0.05	0.02		
Public administration	0.40	0.37	0.38	0.37		
Education	0.06	0.03	0.09	0.02		
Health	0.11	0.07	0.06	0.07		
Other services	0.05	0.04	0.04	0.04		
Firm Size						
Micro	0.18	0.23	0.23	0.24		
Small	0.17	0.19	0.19	0.19		
Medium	0.17	0.16	0.16	0.16		
Large	0.44	0.37	0.37	0.37		
Daily wage	42.66	36.04	41.59	35.38		
Absolute wage gap		6.62	1.07	7.28		
% wage gap		15.52%	2.51%	17.07%		
Number of observations ource: Own elaboration from N	170605	29443	3141	25155		

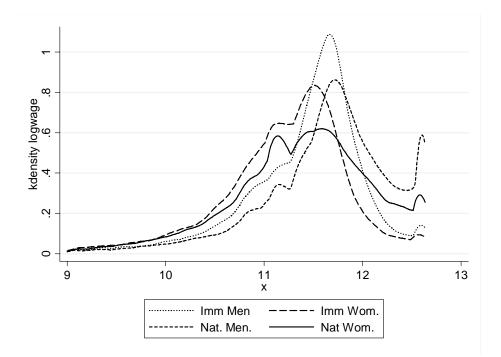
## Table 1. Descriptive Statistics of the analysed sample in 2008

## Table 2. Unexplained wage gap and non-overlapping supports

	$\Delta 0$	%Immigrants Unmatched	% Natives Unmatched	$\Delta 0$	$\Delta 0$
		Total Immigrants		Developing	Developed
				countries	countries
Age, schooling	3.13	0%	0%	3.52	1.36
Age, occupation	2.10	0%	0%	2.34	1.32
Age, occupation, number of children	1.29	1%	1%	1.29	1.24
Age, occupation, number of children, experience	-1.60	2%	3%	-1.50	-0.61
Age, education, occupation, number of children, experience, sector, firm size	-1.46	30%	50%	-1.64	-1.18

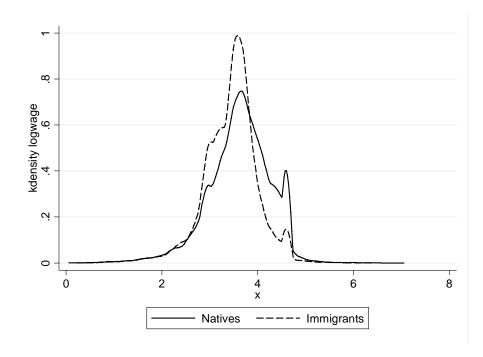
Source: Own elaboration from MCVL 2008.

### Figure 1. Kernel density of daily log wage between native and immigrant (men and women)



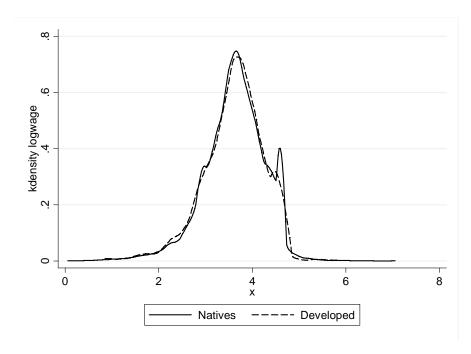
Source: MCVL 2008, log daily wage for men and women between 17 and 64 years old

#### Figure 2. Kernel density of daily log wage between immigrant women and native women



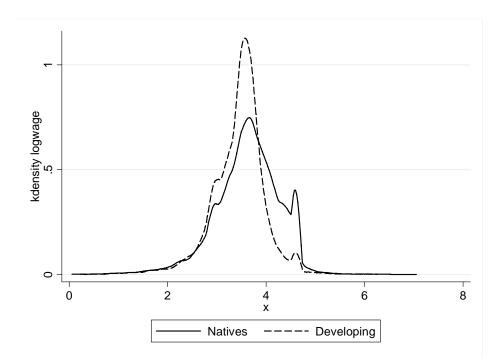
Source: Own elaboration from MCVL 2008

# Figure 3. Kernel density of daily log wage between immigrant women from developed countries and native women



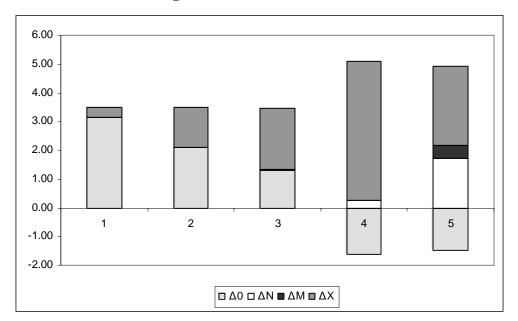
Source: Own elaboration from MCVL 2008

# Figure 4. Kernel density of daily log wage between immigrant women from developing countries and native women



Source: Own elaboration from MCVL 2008

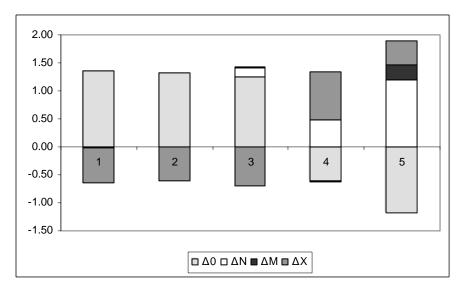
Figure 5. Wage Gap decomposition for different sets of controls in 2008: Immigrant women *vs.* Native women



Set1: Age, Schooling; Set2: Age, occupation; Set3: Age, occupation, number of children; Set 4: Age, occupation, number of children experience, Set5: Age, schooling, number of children, experience, sector, occupation, firm size.

Source: Own elaboration from MCVL 2008

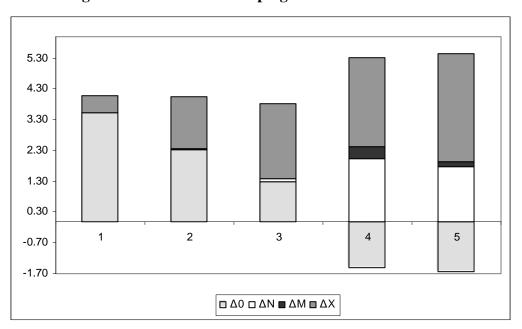
## Figure 6. Wage Gap decomposition for different sets of controls in 2008: Immigrant women from developed countries *vs.* Native women



Set1: Age, Schooling; Set2: Age, occupation; Set3: Age, occupation, number of children; Set 4: Age, occupation, number of children experience, Set5: Age, schooling, number of children, experience, sector, occupation, firm size.

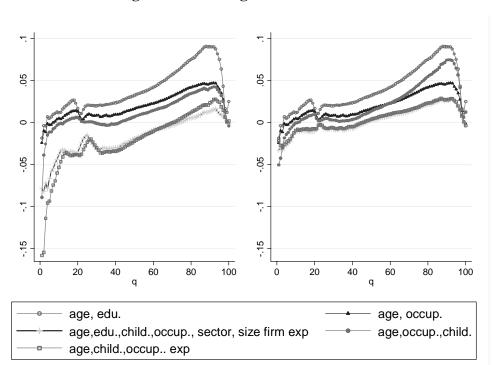
Source: Own elaboration from MCVL 2008.

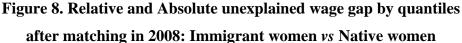
## Figure7. Wage Gap decomposition for different sets of controls in 2008: Immigrant women from developing countries *vs*. Native women



Set1: Age, Schooling; Set2: Age, occupation; Set3: Age, occupation, number of children; Set 4: Age, occupation, number of children experience, Set5: Age, schooling, number of children, experience, sector, occupation, firm size.

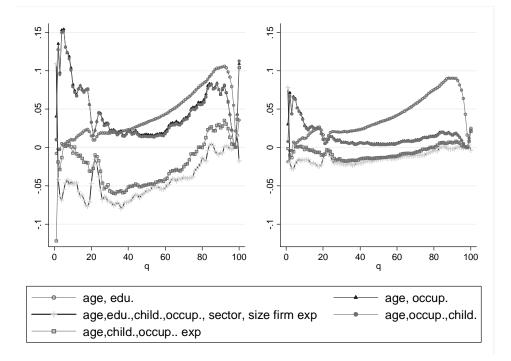
Source: Own elaboration from MCVL 2008





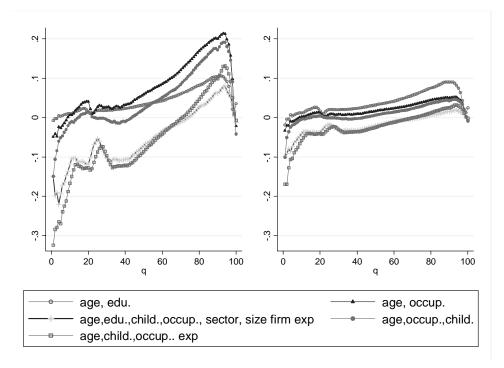
Source: Own elaboration from MCVL 2008

Figure 9. Relative and Absolute unexplained wage gap by quantiles after matching in 2008: Immigrant women from developed countries vs Native women



Source: Own elaboration from MCVL 2008

## Figure 10. Relative and Absolute unexplained wage gap by quantiles after matching in 2008: Immigrant women from developing countries *vs* Native women



Source: Own elaboration from MCVL 2008