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Coral del Río a & Olga Alonso-Villar b
a Departamento de Economía Aplicada, Universidade de Vigo, Fac. de CC Económicas, Campus Lagoas-Marcosende, Vigo, Pontevedra, 36310, Spain
b Departamento de Economía Aplicada, Universidade de Vigo, Fac. de CC Económicas, Campus Lagoas-Marcosende, Vigo, Pontevedra, 36310, Spain E-mail:


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OCCUPATIONAL SEGREGATION OF IMMIGRANT WOMEN IN SPAIN

Coral del Río and Olga Alonso-Villar

ABSTRACT

This contribution analyzes occupational segregation during a period of high employment in the Spanish labor market by gender and immigrant status, using several local and overall segregation measures. Using data from Spain’s 2007 Economically Active Population Survey (Encuesta de Población Activa), the results suggest that immigrant women in Spain suffered a double burden from occupational segregation since it affected them to a greater degree than either native women or immigrant men. In fact, gender is a useful variable for understanding the labor market performance of immigrant workers for this period in Spain, although there were notable discrepancies in the segregation of immigrant women depending on their region of origin. Immigrant women from the European Union (EU) had the lowest occupational segregation, while such segregation appeared to be particularly intense among women from European countries outside the EU and women from Asia.

KEYWORDS

Occupational segregation, gender division of labor, immigrant labor

JEL Codes: J16, D63

INTRODUCTION

Since the mid-1990s, Spain has transformed from being an out-migration country to becoming an immigrant-receiving nation, receiving immigrants mainly from Latin America (Ecuador and Colombia, mostly), Europe (Romania), and the Maghreb (Morocco). This trend has caused a pronounced increase in the immigration rate in Spain over the period 1995–2005, an increase that puts Spain tenth in rank among countries with the highest migrant populations (United Nations, Department of Economic and Social Affairs [UN DESA], Population Division 2009). Within the immigrant population, the distribution by gender is rather balanced (in 2008, there were 2.47 million women and 2.80 million men); however, within the Spanish labor market we see striking differences in the
distribution of immigrant women and men across sectors and occupations. Immigrant men are overrepresented in construction and agriculture, whereas immigrant women are overrepresented in paid domestic services, accommodations, and catering (including restaurants and bars).

The literature on immigration in Spain has dealt mainly with the effects of immigration on public expenditures and revenues (M. Dolores Collado, Iñigo Iturbe-Ormaetxe, and Guadalupe Valera 2004; Rafael Muñoz de Bustillo and José-Ignacio Antón 2009; Pablo Vazquez, Mario Alloza, Raquel Vegas, and Stefano Bertozzi 2009), its effects on native employment, the wage gaps between immigrants and natives, and the assimilation of immigrants into the labor market (Catalina Amuedo-Dorantes and Sara de la Rica 2007; Juan Canal-Domínguez and César Rodríguez-Gutiérrez 2008; Juan J. Dolado and Pablo Vázquez 2008; Hipólito Simón, Esteban Sanromá, and Raúl Ramos 2008). However, scholars have not analyzed occupational segregation as it relates to immigrant status. In addition, studies of occupational segregation by gender in Spain have focused mainly on discrepancies in the distribution of women and men across occupations (María Soledad Otero Giráldez and Carlos Gradín Lago 2001; Ricardo Mora and Javier Ruiz-Castillo 2003, 2004), whereas the analysis of the segregation of particular demographic groups, such as that of immigrant women, has received almost no attention.

This is because most segregation indices measure overall or aggregate segregation rather than the segregation of a particular demographic group, although there are some exceptions, including Hazel Moir and Joy Selby Smith (1979) and Olga Alonso-Villar and Coral del Río (2010a), who analyze the uneven distribution of women across occupations in Australia and Spain, respectively, and Olga Alonso-Villar, Coral del Río, and Carlos Gradín (2012), who explore occupational segregation of several “sex–race” groups in the US. The first study proposes an index by which to quantify the segregation of women, rather than overall segregation by gender, while the second study axiomatically proposes several indices by which to quantify the segregation of any target group in a multigroup context and connects these indexes with overall segregation measures in the literature.

This study analyzes occupational segregation in the Spanish labor market by gender and immigrant status. We apply the measures put forward by Jacques Silber (1992), Sean F. Reardon and Glenn Firebaugh (2002), and David M. Frankel and Oscar Volij (2011) to quantify overall segregation, and we use the tools proposed by Alonso-Villar and del Río (2010a) and Coral del Río and Olga Alonso-Villar (2010) to quantify the segregation of several subgroups. This allows us to determine the contribution of immigrant women to overall segregation (by gender and immigrant status) and also to compare it with the segregation of immigrant men, native women, and native men. In addition, we classify immigrant women
by their region of origin in order to discern any differences among the
groups of immigrant women.

The case of Spain is interesting for three reasons. First, Spain is a country
where occupational segregation explains a large part of the gender wage
gap (Robert Plasman and Salimata Sissoko 2004). Second, Spain provides
an excellent choice for analyzing segregation of immigrants in short and
medium terms because of the recent large increase in immigration. And
third, nationality appears to be an important factor in explaining Spanish
earning gaps (Simón, Sanromá, and Ramos 2008).

Both types of segregation, by gender and by immigrant status, should be a
matter of concern to researchers and policymakers. The concentration of
some demographic groups in low pay and low status jobs, as is the case with
many women and immigrants (Hervé Queneau 2006; Pascale Joassart-
Marcelli 2009), not only consigns these groups to poverty but also affects
how members of other groups see them and how they view themselves
(Richard Anker 1998). These perceptions and self-perceptions, in turn, are
likely to impede their future progress (Anker 1998; Devah Pager and Diana
Karafin 2009). In addition, the exclusion of some groups from various
occupations results in the waste of human resources and reduces the ability
of the market to respond to changing conditions, a fact that should not be
overlooked in a global economy concerned with efficiency and
competitiveness (Anker 1998). Last, but not least, a critical issue is that
segregation makes social inclusion more difficult.

DISPARITIES BY GENDER AND IMMIGRANT STATUS
IN THE LABOR MARKET

Gender disparities in the labor market can emerge from several causes,
including individual characteristics, market opportunities, and social
context. According to human capital theory, discrepancies between job
opportunities for women and men tend to be a consequence of differences
in education and experience; however, although educational achievements
of women and men in Spain are quite similar, men are much more evenly
distributed across occupations than women (del Río and Alonso-Villar
2010). Moreover, del Río and Alonso-Villar (2010) have shown that highly
educated women are less equally distributed across jobs than highly
educated men, suggesting that gender segregation can coexist with equal
levels of education. One should keep in mind, however, that a similar level
of education does not necessarily mean a similar kind of education. In fact,
women in Spanish universities continue to acquire skills oriented mainly
toward jobs traditionally held by women, as is true in other EU countries
(Eurostat 2007). Thus, roughly 80 percent of students in Spain who
graduated with a degree in teaching or health studies in 2004 were women,
while only 26 percent of graduates with a degree in engineering were
women. (These percentages in the EU-27 were 77 and 24 percent, respectively [Eurostat 2007].) To the extent that women’s decisions are “based to a significant extent on labour market opportunities,” as Anker (1998: 7) suggests, it is clear that labor markets still must convince young women that it is worthwhile to study in disciplines dominated by men.

Another factor explaining gender segregation that is discussed in the literature is the existence of differences between women and men in their preferences for jobs. It is important to note that preferences are not independent of the social context, especially to the extent that women assume most of the domestic responsibilities (including child- and eldercare). Compatibility between family life and paid work has important consequences for employment patterns and may well be an important reason why many women prefer occupations with flexible work hours. In spite of this, Barbara Petrongolo (2004) shows that differences in preferences do not entirely explain the overrepresentation of women in part-time and temporary jobs observed in most EU countries. In fact, she suggests that discrimination does exist in southern Europe since the observed segregation is not adequately explained by differences in productivity or preferences.

In addition, segregation may be a way to solve the difficulties that occur when women and men work side by side in the same workplace. According to Claudia Goldin’s (2002) “pollution theory of discrimination,” men may perceive that they lose status when women are hired for the same jobs that men hold, since these men may view women’s entry as a sign that those occupations have low requirements. Consequently, discrimination against women emerges, at least partially, as a form of protection of men’s occupational status. George A. Akerlof and Rachel E. Kranton (2000) add further psychological considerations to the analysis, proposing a model based on the identity conflicts that arise when women and men share the same occupations. When a woman works in what has traditionally been a male occupation, she may suffer a direct cost due to a possible loss of her identity as a woman and an indirect (but not necessarily lower) cost if the identities of the men with whom she works are affected by her presence, and they act to strengthen and maintain their own identities. According to Akerlof and Kranton (2000), the interactions among these factors could contribute to a separation between women and men at work that creates a situation that is not without cost.

The literature also offers several reasons for why the distribution of immigrants across occupations may depart from that of natives (Pak-Wai Liu, Junsen Zhang, and Shu-Chuen Chong 2004; Jaii Parasnis 2006). Not only do immigrants often have to accept jobs that do not match their skills, but their job opportunities often depend on migrant networks, all factors likely to reinforce their concentration in occupations with a high immigrant presence. In addition, the educational attainment of immigrants is often
very different from that of the native population with respect to both the number of years of schooling and specific knowledge (for instance, in the case of lawyers and doctors; see Barry R. Chiswick and Paul W. Miller [2009]). Language and cultural differences are also likely to be a problem, especially if employers tend to be prejudiced against immigrants. There may be other problems as well, including segregation of immigrants in neighborhoods that determine their social networks as well as the provision of public goods (such as education, healthcare, and transportation), all of which have an impact on the job opportunities of immigrants, especially women immigrants (Joassart-Marcelli 2009). School segregation, in particular, tends to affect the educational outcomes of students (David Card and Jesse Rothstein 2007), and it serves to perpetuate a fragmented society.

**IMMIGRANT CHARACTERISTICS IN SPAIN**

As mentioned above, Spain has experienced a marked increase in its immigrant population since the mid-1990s. As Figure 1 shows, according to the revised version of the municipal census (Revisión Anual del Padrón Municipal) undertaken by Spain’s National Institute of Statistics (Instituto Nacional de Estadística [INE] 1998–2009, 2010), the number of immigrants in 1996 was more than half a million, while in 2008 it had increased to more than 5 million people. Consequently, the immigration rate has

![Figure 1 Immigrant women and men in the municipal census and immigration rate (percent)](image)

risen 10 percentage points, from 1.4 to 11.4 percent. The cause of the expansion in immigration is related to both the notable increase in the Spanish gross domestic product (GDP; average annual percent growth between 1998 and 2007 was 3.8 percent; European Commission 2009) and the inability of the native labor supply to satisfy high demand, especially in low-paid jobs (José Ignacio Pérez Infante 2009).

We use data from the 2007 Economically Active Population Survey (Encuesta de Población Activa; EPA) conducted by INE following Eurostat guidelines (INE 2007). This quarterly survey offers labor market information from a representative sample of households. It is conducted mainly to provide figures on the labor force and commonly used for international comparisons (in particular, to obtain official unemployment and labor force participation rates). Even though microdata corresponding to 2009 are available, for this research we have chosen instead to use data from the second quarter of 2007 since we are interested in quantifying the occupational segregation of immigrant women during a period of high employment. The reason for this choice is that the higher levels of unemployment occurring since 2007 are affecting industries unevenly and might be inducing additional changes in the occupational distribution of women and immigrants. The effect of the crisis on these demographic groups would require an additional study comparing how things were before the global economic crisis and how they have evolved since.

According to the EPA, in 2007, 16.3 percent of the employed population of Spain were immigrants, and 43.6 percent of these employed immigrants were women (INE 2007). (This percentage was 3 points higher than the percentage of native women among native workers.) Figure 2 shows the 2007 distribution of both women and men immigrant workers according to six large regions of origin labeled as follows: “EU-25 and others,” “Rest of Europe,” “Latin America,” “Africa,” “Asia,” and “Rest of the world.” The region labeled “EU-25 and others” includes all EU member states with the exception of Romania and Bulgaria. This regional bloc also includes Iceland, Liechtenstein, Norway, and Switzerland, as, even though these countries are not currently members of the EU, the policies applied to immigrants from these countries in Spain are similar to those for immigrants from countries within the EU-25 bloc (“Régimen Comunitario de Residencia” [Community Residence Scheme]). We excluded Romania and Bulgaria, which have belonged to the EU since 2007, from the EU bloc and included them in “Rest of Europe” because most of the immigrants from these countries in Spain are subject to a transitory policy regime that is similar to that for immigrants from countries outside the EU (“Régimen General de Extranjería” [General Regime]). The region labeled “Rest of Europe” includes all other European countries, and the region labeled “Rest of the world” includes part of North America (Canada and the US), Australasia, and Oceania.
Figure 2 shows that in 2007, Latin American immigrants represented nearly 50 percent of total employed immigrants, and this region was the only one for which the number of women immigrants exceeded that of men. (Of the total number of Latin American immigrants employed in Spain, 50.3 percent were women.) Looking at each gender separately, we see that immigrant women employed in Spain represented 7.1 percent of the labor force and came mainly from Latin American and European countries. Regarding immigrant men, who had a higher presence in the labor force (9.2 percent), those from Africa had an important weight as well. Immigrants in the “Rest of the world” subgroup represented a very small group in both cases.

Geographical proximity can explain the number of immigrants from European countries and Africa, especially if we take into account that Morocco (which contributed nearly 12 percent of total employed immigrants) was the African country with the greatest number of paid workers in Spain in 2007, followed at great length by Senegal (see Figure 3). Immigration from the group labeled “Rest of Europe” was also strongly concentrated in two countries: Romania (which represented 12.4 percent of total employed immigrants) and Bulgaria (2 percent). Both countries have belonged to the EU since 2007, even though their per capita GDP was below 50 percent of the EU average, which helps to explain the large numbers of immigrants from these countries. On the contrary, the presence of immigrants from European countries outside the EU bloc...
within the Spanish labor market was more balanced, and none of them stood out compared to the others.

Regarding Latin American immigrants, historical and cultural factors rather than geographic proximity explains the strong presence this group had in Spain. A shared common language and the fact that some of the migrants who moved to Central and South America in the past (for economic as well as political reasons) were of Spanish nationality contributed to the strong networks found on both sides of the Atlantic, in turn facilitating the arrival of new paid workers to Spain. In 2007, Ecuador (with 14 percent of total employed immigrants), Colombia (7 percent), Argentina and Bolivia (around 5 percent each), and Peru (3 percent) were the countries with the highest presence of employed immigrants in Spain.

Table 1 shows the main characteristics of immigrants in Spain. Employed immigrant women (and men), especially those from Africa, Latin America, and European countries outside the EU bloc, were younger than employed natives. Regarding their educational levels, we find notable differences among immigrants depending on their region of origin.

a) A greater proportion of both employed women and employed men from the EU bloc, and also from the region “Rest of the world,” had university degrees than did employed natives. Thus, while 41 percent
### Table I Distribution of employed immigrants and natives by education level and age (2007)

<table>
<thead>
<tr>
<th>Age</th>
<th>Natives</th>
<th>EU-25 and others</th>
<th>Rest of Europe</th>
<th>Latin America</th>
<th>Africa</th>
<th>Asia</th>
<th>Rest of the world</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>&lt; 30</td>
<td>26.9</td>
<td>24.7</td>
<td>24.1</td>
<td>22.4</td>
<td>46.4</td>
<td>41.0</td>
<td>36.7</td>
</tr>
<tr>
<td>30–45</td>
<td>43.3</td>
<td>41.1</td>
<td>55.7</td>
<td>56.7</td>
<td>40.1</td>
<td>47.9</td>
<td>46.6</td>
</tr>
<tr>
<td>&gt; 45</td>
<td>29.8</td>
<td>34.2</td>
<td>20.2</td>
<td>20.9</td>
<td>13.5</td>
<td>11.1</td>
<td>16.6</td>
</tr>
</tbody>
</table>

**Education**
- Low-educated 37.2 48.9 28.2 34.9 28.5 28.9 37.7 42.6 59.5 69.2 48.6 44.9 14.8 7.7
- Intermediate-educated 22.0 20.9 27.4 23.4 45.1 46.8 41.3 38.1 24.9 23.1 32.2 29.4 22.7 9.1
- Highly educated 40.8 30.2 44.4 41.7 26.4 24.3 21.0 19.3 15.6 7.7 19.2 25.7 62.5 83.2

**Source:** Authors' calculations based on 2007 EPA (INE 2007).
of native women in Spain (and 30 percent of native men) had a high level of education, this percentage increased to 44 percent for women from the EU bloc and to 63 percent for women from “Rest of the world.” (These percentages were, respectively, 42 and 83 percent for men.)

b) Employed immigrants from other European countries and Latin America had an intermediate level of education, since more than 41 percent of women and 38 percent of men had finished secondary school.

c) In the Asian and African groups, the proportion of employed women (and men) with a low level of education was particularly high: 49–60 percent for women and 45–69 percent for men.

**ANALYTICAL APPROACH: SEGREGATION MEASURES**

Sociologists and economists have given a great deal of attention to analyzing the segregation of students across schools and occupational segregation in the labor market. Most of these studies focus on the case of two populations, mainly women and men but also blacks and whites, and either propose ad hoc measures used for empirical analysis (Otis Dudley Duncan and Beverly Duncan 1955; Tom Karmel and Maureen MacLachlan 1988; Jacques Silber 1989) or axiomatically derive segregation indices (see, for example, Robert M. Hutchens [1991, 2004]; Satya R. Chakravarty and Jacques Silber [2007]). In this binary context, segregation is said to exist so long as one distribution departs from the other.

However, this kind of measure does not allow quantification of the segregation of employed women, as it is sometimes said to do (Moir and Smith 1979); rather, it measures gender segregation, since groups of women and men are contrasted. Note that segregation exists not only when women have a low presence in certain occupations, but also when men have a low presence in others, since both women and men shape the employment structure of the economy. In fact, as Anker (1998) documented, there are occupations everywhere that are strongly feminized (nurse, secretary/typist, housekeeper, bookkeeper/cashier, building caretaker/cleaner, and tailor/sewer), suggesting that employed men are not distributed evenly across occupations, even though “the value of these niches to women is often of dubious value as these occupations tend to have low pay and status” (Anker 1998: 285).

**Local segregation measures**

Consequently, one cannot use standard segregation indices for measuring the segregation of women or the segregation of any other target group.
Measuring the segregation level of a target group does not imply, however, that one can determine the segregation of that group without taking into account the remaining population subgroups. This measure can be achieved by comparing the distribution of the target group with the employment structure of the economy. This idea follows Alonso-Villar and del Río (2010a), who propose several measures with which to quantify the segregation of a target group, labeled local segregation, and analyze their properties. In what follows, we introduce these local tools and present their notation.

Consider an economy with $J > 1$ occupations among which a total population $T$ is distributed according to distribution $t = (t_1, t_2, \ldots, t_J)$, where $t_j > 0$ represents the number of individuals in occupation $j$ ($j = 1, \ldots, J$) and $T = \sum_j t_j$. Let us denote by $e^g \equiv (e^g_1, e^g_2, \ldots, e^g_J)$ the distribution of the target group $g (g = 1, \ldots, G)$ across occupations, where $e^g_j \leq t_j$. Distribution $e^g$ can represent, for example, immigrant women or any other group of citizens in which we are interested. Therefore, the economy can be summarized by matrix $E$, which represents the number of individuals of each target group in each occupation, where rows and columns correspond to population subgroups and occupations, respectively. The total number of individuals in occupation $j$ is $t_j = \sum_g e^g_j$, and the total number of individuals of target group $g$ is $C^g = \sum_j e^g_j$.

$$
\begin{pmatrix}
\vdots & \vdots \\
e^g_1 & e^g_J \\
\vdots & \vdots \\
\end{pmatrix} \quad \rightarrow \quad 
\begin{pmatrix}
\sum_j e^g_1 = C^1 \\
\vdots \\
\sum_j e^g_J = C^G \\
\end{pmatrix}
$$

$$
\begin{pmatrix}
\sum_g e^g_1 = t_1 \\
\vdots \\
\sum_g e^g_J = t_J \\
\end{pmatrix}
$$

To measure the segregation of a target population group, we compared the corresponding row, $(e^g_1, \ldots, e^g_j)$, with the total sum of the rows, $(t_1, \ldots, t_J)$, and expressed both distributions in proportions. In other words, we compared distribution $(\frac{e^g_1}{t_1}, \ldots, \frac{e^g_J}{t_J})$ with $(\frac{t_1}{T}, \ldots, \frac{t_J}{T})$. 

101
Within this framework, Alonso-Villar and del Río (2010a) propose the following measures for quantifying the segregation of target group \( g \):

\[
G^g = \sum_{i,j}^{T} \frac{a_i^g - a_j^g}{2C_g^g},
\]

where the first measure is a variation of the classic Gini index and the second represents a family of indices related to the generalized entropy family (\( a \) can be interpreted as a segregation aversion parameter). We used these indices, together with a variation of Moir and Smith’s (1979) index of dissimilarity,

\[
D^g = \frac{1}{2} \sum_j \left| \frac{a_j^g}{C_g^g} - \frac{b_j}{T} \right|,
\]

in our empirical analysis.

To analyze the segregation of any demographic group, we also used the local segregation curve proposed by Alonso-Villar and del Río (2010a). To calculate this curve, first, we ranked the occupations in ascending order of the ratio \( c_j^g / b_j \) \((j = 1, \ldots, J)\). Second, we plotted the cumulative proportion of employment, \( \sum_{i=1}^{j} \frac{a_i}{T} \), on the horizontal axis and the cumulative proportion of individuals in the target group (immigrant women, for example), \( \sum_{i=1}^{j} \frac{c_i}{C_g} \), on the vertical axis. Therefore, this curve can be written as

\[
S^g_{(\alpha; \tau)}(\tau_j) = \frac{\sum_{i \leq j} c_i^g}{C_g}
\]

where \( \tau_j \equiv \sum_{i \leq j} \frac{b_i}{T} \) is the proportion of cumulative employment represented by the first \( j \) occupations. Therefore, a local segregation curve shows underrepresentation of the target group with respect to the employment structure of the economy, decile by decile. If the target group is distributed among occupations in the same manner as the distribution of total employment, the local segregation
curve would be equal to the 45-degree line, and no segregation would exist for that demographic group.

As Alonso-Villar and del Río (2010a) show, index $G^g$, together with the family of indices $\Phi_a(c^g; t)$ (and also any other local segregation index satisfying some basic properties), is consistent with nonintersecting $S^g$ curves. In other words, when comparing two different distributions, if the segregation curve of one of them dominates that of the other (that is, if the segregation curve of the former lies at no point below the latter and at some point above), these indices will take a higher value when they are evaluated at the dominated distribution. This makes the use of these curves a robust procedure, since, when segregation curves do not cross, a powerful conclusion can be reached without the use of several local indices.

However, if curves cross or if one is interested in quantifying the extent of segregation, the use of indices satisfying some basic properties seems the most appropriate course to take. When curves cross, the conclusion reached with an index may differ from that of others, since even though all these local indices have certain basic properties in common, they disagree in additional properties. This is a consequence of the different weights given by each index to discrepancies in occupations between the benchmark and distribution of the target group.10

### Overall segregation measures

In recent years, the study of segregation in the case of multiple categories of individuals has received increasing attention among scholars. These measures quantify the differences among groups altogether (which explains why Alonso-Villar and del Río [2010a] labeled them overall measures). Thus, the mutual information index characterized by Frankel and Volij (2011) in terms of basic axioms can be written as:11

$$M = \sum_g \frac{C^g}{T} \log \left( \frac{T}{C^g} \right) - \sum_j \frac{t_j}{T} \left[ \sum_g \frac{c^g_j}{t_j} \log \left( \frac{t_j}{c^g_j} \right) \right].$$

In our case, it measures the amount of information that the random variable with probability distribution $(\frac{t_1}{T}, \ldots, \frac{t_J}{T})$ contains about another random variable with probability distribution $(\frac{C^1}{T}, \ldots, \frac{C^K}{T})$. In other words, it quantifies “the reduction in the uncertainty of one random variable due to the knowledge of the other” (Thomas M. Cover and Joy A. Thomas 1991: 18). One can easily show that $M$ can be rewritten as follows:

$$M = \sum_g \frac{C^g}{T} \Phi_1(c^g; t).$$
Therefore, this overall segregation measure can be built by aggregating local index $\Phi_1(c^g; t)$ in an effective manner: Each target group is weighted by its demographic weight, which seems helpful for empirical analyses, since it allows one to ascertain the contribution of each target group to overall segregation.

To compare the robustness of our results, in our empirical analysis we also used other overall segregation measures previously proposed in the literature, such as those offered by Silber (1992) and Reardon and Firebaugh (2002). In this manner, the index proposed by the former, $I_p$, can be written as the weighted mean of local index $D^g$ for each target group in which the economy can be partitioned:

$$I_p = \sum_g \frac{C^g}{T} D^g. \quad (7)$$

On the other hand, the unbounded Gini index, $G$, proposed by Reardon and Firebaugh (2002) to measure overall segregation, is the weighted mean of local index $G^g$ for each target group:

$$G = \sum_g \frac{C^g}{T} G^g. \quad (8)$$

SEGMERATION IN THE SPANISH LABOR MARKET BY GENDER AND IMMIGRANT STATUS

We find that in 2007 immigrant women were employed in the following economic sectors: 28 percent were in domestic services, 20 percent were in accommodations and catering (including bars and restaurants), and 24 percent were in branches of real estate and other business activities (including cleaning) and retail trades (see Appendix Table 1; INE 2007). These percentages varied widely, however, by region of origin. Thus, women from the EU bloc had a distribution across branches of activity similar to that of employed native women, which showed a low presence in paid domestic services and a high presence in education and manufacturing industries. The pattern of employed women from the “Rest of the world” differed notably from that of native and remaining immigrant women, but we must be careful about deriving conclusions from the “Rest of the world,” given the small weight this group had within the Spanish labor market. Women from other European countries, Latin America, and Asia were highly concentrated in paid domestic services, with ratios between 28 and 39 percent. It is also important to emphasize the
strong presence of African and Asian women employed in accommodations and catering (10 percentage points above that of the entire population of immigrant women).

The concentration of immigrant men in construction was particularly intense for those coming from Africa, Latin America, and European countries outside the EU bloc (38, 41, and 55 percent, respectively). The presence of Europeans from outside the EU bloc and that of African men employed in agriculture (around 12 percent each) was also striking.

**Occupational segregation of immigrant women**

By using the local segregation indexes and curves defined in expressions (1) to (4), we quantified the occupational segregation of immigrant women and compared it with that of immigrant men, native women, and native men. First, we plotted the occupational segregation curve of immigrant women, together with the segregation curves of immigrant men, native women, and native men (see Figure 4 in which the four target groups are included). Each point of the segregation curve of immigrant women indicates the proportion of these workers corresponding to each cumulative decile of total employment. (The remaining curves are built analogously.)

To build these curves, the occupations must be ranked according to the relative presence of the target group. Thus, the first decile of the curve of immigrant women represented 10 percent of total employment, and it included those occupations in which immigrant women had the lowest relative presence; the second cumulative decile represented 20 percent of total employment, and it also included those occupations in which the target group had the lowest relative presence, and so on. If 10 percent of immigrant women worked in the occupations included in the first decile of total employment, 20 percent in the second, 30 percent in the third, and so on, then one could conclude that the distribution of employed immigrant women across occupations did not show segregation (and the corresponding curve would be equal to the 45-degree line). So long as the segregation curve of the target group departed from the 45-degree line, the target group was segregated: It was underrepresented in certain kinds of occupations (those included in the bottom deciles) and, consequently, overrepresented in others (those in the top deciles). The further this curve was from the 45-degree line, the higher the segregation level of the target group.

As Figure 4 shows, the segregation curve of immigrant women was below that of immigrant men and native women and men. Therefore, immigrant women suffered a double segregation: They were more segregated than both immigrant men and native women. Regarding immigrant men, their curve was also below that of native men. However, the use of these curves
Figure 4 Occupational segregation curves of immigrant and native women and men (2007)
Source: Authors’ calculations based on 2007 EPA (INE 2007).

did not allow one to draw any conclusions about the segregation of this group compared with that of native women, since the curves crossed, which made the use of local segregation indices imperative (see Table 2, where six of the local indices defined above are shown). Most local indices indicated that the occupational segregation of immigrant men was higher than that of native women, and all of them showed much higher value than those of native men. (This was consistent with the conclusion reached by using the segregation curves, since the curve of immigrant men was clearly below that of native men.)

Figure 4 reveals that there were many occupations in which immigrant (and also native) women were seldom employed, while the number of occupations in which immigrant (and native) men were seldom employed was much lower. Thus, in the second cumulative decile of the corresponding segregation curve (which included the 20 percent of jobs where the respective target group had the lowest presence), 5.8 percent of native men, 3.3 percent of immigrant men, 1 percent of native women, and 0.4 percent of immigrant women were employed. Therefore, one should not be surprised that disparities in terms of segregation between both immigrant groups were so large (as shown in Table 2). Given that the
The segregation curve of immigrant men was never below that of immigrant women, all the segregation indices consistent with this criterion showed higher values for the latter; moreover, these indices showed that the segregation of immigrant women was at least 26 percent higher than that of immigrant men.

Furthermore, we ranked occupations from a low to a high presence of immigrant women and built noncumulative quintiles of total employment so that the first quintile represented 20 percent of total employment and included the occupations with the fewest immigrant women, while the fifth quintile represented 20 percent of total employment and included those occupations with the most immigrant women (see Figure 5, bar 1). Next, we plotted the distribution of employed immigrant women across these quintiles and compared it with the distribution of the remaining population subgroups across the same quintiles (see Figure 5, bars 2–5).

On the one hand, we find that in those occupations where there were almost no immigrant women (for example, in the first quintile), there were almost no native women, either. On the other hand, in those occupations where most immigrant women were employed (which corresponds to the fifth quintile), the proportion of employed native women was nearly double that of immigrant men and four times that of native men. In other words, the distribution of immigrant women seems to be more similar to that of native women than to the distribution of immigrant men. In fact, if we consider the top ten occupations in which immigrant women had the highest relative presence (which included paid domestic employees and other indoor cleaning staff, catering service workers, and personnel service workers, *inter alios*), we find that these occupations employed 77 percent of immigrant women, 45 percent of native women, 21 percent of immigrant men, and 11 percent of native men (see Appendix Table 2). On the contrary, the list of occupations with the lowest presence of immigrant women represented 1 percent of immigrant women, 5 percent of native

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**Table 2 Local segregation indices of immigrant and native women and men and employment shares (2007)**

<table>
<thead>
<tr>
<th>Local segregation</th>
<th>$\Phi_{0.1}$</th>
<th>$\Phi_{0.5}$</th>
<th>$\Phi_1$</th>
<th>$\Phi_2$</th>
<th>$D^c$</th>
<th>$G^c$</th>
<th>Employment shares (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrant women</td>
<td>1.18</td>
<td>0.79</td>
<td>0.73</td>
<td>0.98</td>
<td>0.49</td>
<td>0.63</td>
<td>7.1</td>
</tr>
<tr>
<td>Immigrant men</td>
<td>0.49</td>
<td>0.43</td>
<td>0.42</td>
<td>0.54</td>
<td>0.37</td>
<td>0.50</td>
<td>9.2</td>
</tr>
<tr>
<td>Native women</td>
<td>0.54</td>
<td>0.40</td>
<td>0.31</td>
<td>0.26</td>
<td>0.31</td>
<td>0.41</td>
<td>33.9</td>
</tr>
<tr>
<td>Native men</td>
<td>0.21</td>
<td>0.18</td>
<td>0.15</td>
<td>0.13</td>
<td>0.23</td>
<td>0.29</td>
<td>49.8</td>
</tr>
</tbody>
</table>

**Notes:** These indices quantify the segregation level of a target group by comparing its distribution across occupations with the occupational structure of the economy. The higher the index value, the greater the extent of segregation for that group. **Source:** Authors’ calculations based on 2007 EPA (INE 2007).
women, 51 percent of immigrant men, and 40 percent of native men. Consequently, the 2007 EPA data reveal that immigrant women tended to be concentrated in jobs that were strongly feminized, while immigrant men were concentrated in the most masculinized jobs in the economy. Exceptions were in two out of sixty-six occupations—catering services and agricultural, livestock, and fishing labor—in which both immigrant women and immigrant men were overrepresented compared with their employment shares in the economy.

It is important to note that according to the 2002 Spanish Wage Structure Survey (Encuesta de Estructura Salarial; INE 2002), occupations with a high concentration of immigrant women tended to pay hourly wages below the national median wage (see Appendix Table 2, last column). The hourly wages of the occupations with a low presence of immigrant women were higher, even though those in which immigrant men had a higher presence were also below the national median wage. In fact, immigrant women and men shared a strong presence in low-wage occupations, even though, as shown above, they differed in the types of low-wage occupations in which each group worked.

Finally, if we calculate the contribution of each target group to overall occupational segregation, we find that the category of immigrant women contributes almost 12 percentage points above its demographic weight according to index $M$ (18.9 versus 7.1 percent) and 5 percentage points above it according to indices $G$ and $I_p$ (compare Tables 2 and 3). The contribution of both immigrant men and native women to overall
segregation was between 3 and 5 percentage points above their demographic weights, which reinforces our previous finding that immigrant women suffered a double segregation.

### Occupational segregation of immigrant women by region of origin

In what follows, we analyze whether the distribution of immigrant women across occupations varies depending on the region of origin of these immigrants. For that purpose, we decomposed the segregation curve of immigrant women into six subgroups (see del Río and Alonso-Villar [2010] for a more technical description of this kind of decomposition). The first six bars in Figure 6 represent the distribution of the corresponding subgroups of immigrant women across noncumulative quintiles of total employment once occupations had been ranked from a low to a high presence of immigrant women. Therefore, each noncumulative quintile represents 20 percent of total employment in Spain, and the classification of jobs in these five quintiles was common for all the subgroups considered in the analysis. The seventh bar at the right-hand side of Figure 6 represents the distribution of immigrant women across the above-described quintiles.

Women from the EU bloc were more evenly distributed across noncumulative quintiles than the remaining subgroups (and also more evenly than the group of immigrant women as a whole), since they worked in occupations across which the employment of immigrant women varied; however, women from Asia, Africa, Latin America, and the “Rest of Europe” were strongly concentrated in occupations with many other immigrant women (the fifth quintile ranges between 58 and 83 percent). Thus, 83 percent of the women from European countries outside the EU bloc were employed in occupations in the Spanish labor market with the highest presence of immigrant women.17

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**Table 3 Overall segregation and contribution of each target group (2007)**

<table>
<thead>
<tr>
<th>Overall segregation</th>
<th>M</th>
<th>G</th>
<th>Ip</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.27</td>
<td>0.38</td>
<td>0.29</td>
</tr>
</tbody>
</table>

**Contribution to overall segregation (percent)**

<table>
<thead>
<tr>
<th></th>
<th>$C_M^G$</th>
<th>$C_T^G$</th>
<th>$C_D^G$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrant women</td>
<td>18.9</td>
<td>11.9</td>
<td>12.1</td>
</tr>
<tr>
<td>Immigrant men</td>
<td>14.2</td>
<td>12.1</td>
<td>11.7</td>
</tr>
<tr>
<td>Native women</td>
<td>39.0</td>
<td>37.1</td>
<td>37.0</td>
</tr>
<tr>
<td>Native men</td>
<td>27.9</td>
<td>38.9</td>
<td>39.2</td>
</tr>
</tbody>
</table>

**Notes:** These measures quantify the disparities among the groups into which total population is partitioned. Population has been divided into four mutually exclusive groups: immigrant women, immigrant men, native women, and native men, so that the indices measure the extent to which the occupational distributions of these four groups departed from each other.

**Source:** Authors’ calculations based on 2007 EPA (INE 2007).
By plotting the segregation curve of each subgroup of immigrant women (see Figure 7), we find that the occupational segregation of women from the EU bloc was the lowest. In addition, European women from outside the EU bloc had a higher occupational segregation than Latin American and African women. This may have been a consequence of the more intense concentration of the former in two out of sixty-six occupations: catering service workers (such as cooks and waiters) and, especially, paid domestic and other indoor cleaning workers (which employed, respectively, 22 and 46 percent of immigrant women from European countries outside the EU bloc).

Most local indices also showed that women from European countries outside the EU bloc suffered more segregation than Asian women (see Table 4), while the latter were more segregated than Latin American and African women. Consequently, women from European countries outside the EU bloc represented the group with the highest occupational segregation in Spain (excluding the particular case of women from the “Rest of the world”), followed closely by Asian women. We also find that, according to four out of six indices, segregation was slightly higher for Latin American women than it was for African women, which may have been a consequence of the stronger concentration of Latin American women in the occupation group paid domestic and other indoor cleaning staff (40 versus 31 percent; see Appendix Table 3). Note, however, that the curve of African women begins to take on values above zero to the right of the point on the horizontal axis where the curve of Latin American women begins to
Figure 7 Occupational segregation curves of immigrant women from six large regions (2007)
Source: Authors’ calculations based on 2007 EPA (INE 2007).

Table 4 Local segregation indices of immigrant women and employment shares (2007)

<table>
<thead>
<tr>
<th>Local segregation of immigrant women</th>
<th>$\Phi_{0.1}$</th>
<th>$\Phi_{0.5}$</th>
<th>$\Phi_1$</th>
<th>$\Phi_2$</th>
<th>$D_g$</th>
<th>$G_g$</th>
<th>Immigrant women (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU-25 and others</td>
<td>2.23</td>
<td>0.65</td>
<td>0.45</td>
<td>0.40</td>
<td>0.38</td>
<td>0.48</td>
<td>15.2</td>
</tr>
<tr>
<td>Rest of Europe</td>
<td>3.77</td>
<td>1.45</td>
<td>1.25</td>
<td>1.87</td>
<td>0.65</td>
<td>0.78</td>
<td>18.4</td>
</tr>
<tr>
<td>Latin America</td>
<td>1.52</td>
<td>0.95</td>
<td>0.87</td>
<td>1.22</td>
<td>0.54</td>
<td>0.68</td>
<td>56.1</td>
</tr>
<tr>
<td>Africa</td>
<td>3.28</td>
<td>1.07</td>
<td>0.84</td>
<td>1.00</td>
<td>0.52</td>
<td>0.67</td>
<td>6.9</td>
</tr>
<tr>
<td>Asia</td>
<td>5.27</td>
<td>1.45</td>
<td>1.07</td>
<td>1.29</td>
<td>0.62</td>
<td>0.74</td>
<td>3.0</td>
</tr>
<tr>
<td>Rest of the world</td>
<td>8.17</td>
<td>2.30</td>
<td>1.92</td>
<td>3.91</td>
<td>0.79</td>
<td>0.89</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Notes: These indices quantify the segregation level of a target group by comparing its distribution across occupations with the occupational structure of the economy. The higher the index value, the greater the extent of segregation for that group.
Source: Authors’ calculations based on 2007 EPA (INE 2007).

take on values above zero (see Figure 7, where the curve of African women is below that of Latin American women for values on the horizontal axis below 0.65), meaning that Latin American women seemed to work in more types of occupations than African women, which explains why indices that
pay special attention to what happens at the bottom deciles take on higher values for African women (as happens with $\Phi_a$ for $a = 0.1$ and 0.5).

**CONCLUSIONS**

We have found that women immigrants in Spain suffered a double segregation in the labor market in 2007, which was a period of high employment in Spain. Employed immigrant women were more segregated than both native women and immigrant men. The range of occupations in which there are almost no women immigrants was much wider than the range for occupations without men immigrants, and immigrant women tended to be concentrated in a single occupation – as paid domestic and other indoor cleaning personnel – in which 35.6 percent were employed. Consequently, immigrant women were at least 26 percent more occupationally segregated than immigrant men. Moreover, even though immigrant women shared with immigrant men a strong concentration in low-paid jobs and also a high presence in an occupation (catering services) in which both groups had much higher employment rates than natives, the distribution of immigrant women across occupations showed a greater resemblance to the distribution of other women than to that of immigrant men. All of this suggests that gender is a useful variable for understanding the performance of immigrant workers in the Spanish labor market. Furthermore, for 2007, gender seemed to trump immigrant status.

Our analysis of the distribution of women immigrants across occupations by region of origin showed that the pattern of women coming from the EU bloc was notably different from that of the remaining subgroups. Women from the EU bloc were not as concentrated in occupations with other immigrant women and were less occupationally segregated. On the other hand, occupational segregation was particularly intense among women from European countries outside the EU bloc and also among Asian women. We also found that Latin American women had a slightly higher occupational segregation than African women, even though the range of occupations in which African women rarely worked was greater than the range for Latin American women.

Regarding occupational discrepancies by gender, our study suggests that they were more noticeable in the immigrant group than in the natives group. In fact, immigrants were concentrated not only in the lowest-wage occupations but also in those with the highest rates of feminization/masculinization, which might help to explain the recent evolution of segregation between women and men in the Spanish labor market. According to Olga Alonso-Villar and Coral del Río (forthcoming), the extraordinary immigration increase that Spain has experienced since the mid-1990s has been accompanied by an augmentation in the occupational
segregation of immigrant workers, especially between 2001 and 2006. As these authors point out, this phenomenon seemed to be a consequence of two factors. On the one hand, occupations with a high concentration of immigrants at the beginning of the period (mainly, paid domestic employees, catering service workers, personnel service workers, and structural construction workers) grew much more than other occupations. On the other hand, these new jobs were mostly filled by immigrants, intensifying the concentration of immigrants in a few highly gendered occupations. This might explain the rise of overall occupational segregation by gender that occurred in Spain in this period (Olga Alonso-Villar and Coral del Río 2010b).

The incorporation of immigrant women in the Spanish labor market cannot be properly understood without paying attention to the relationships between the concentration of women in reproductive work, the increasing participation of women in the labor market, and social conditions that halt their participation. As Lourdes Benería points out, in the EU,

the crisis of care has intensified as women have progressively moved into the paid labor force and as demographic trends have resulted in very low fertility rates and high life expectancy in many countries, with corresponding aging populations and increased pressure on social security systems. (2008: 2)

In Spain, a growing proportion of reproductive work has been incorporated into the market since, on the one hand, welfare policies aimed to balance family and labor market work have not been sufficiently developed and, on the other hand, most men still leave the domestic responsibilities (including care work) to women. The opportunity of hiring immigrant women (who are more likely to accept low-paid jobs given their scarcer opportunities of reaching better positions) has fostered the demand for domestic employees and personnel service workers. This fact, together with the high concentration of immigrant women in catering services (also characterized by low wages, long working days, and, in many cases, illegal working conditions), explains the tough conditions that these women face in the Spanish labor market.

The concentration of immigrant women workers in poorly paid jobs has a negative effect on their well-being and also diminishes their future prospects, which should be a matter of concern for policymakers and is a reason for continued research in this matter. Equalizing the labor rights of paid domestic and care workers to those of other workers, imposing greater control over the working conditions in occupations in which immigrant women are concentrated, and developing active labor market policies (in particular, training courses) especially oriented toward these women would
certainly improve their well-being by widening their possibilities in the labor market.

The Great Recession is having a notable impact on the Spanish labor market. The unemployment rate of women reached 24.9 percent in the first quarter of 2012, and the corresponding rate for men was 24.1 percent (INE 2012). Given the higher vulnerability of immigrant women and men, as a consequence of their higher occupational segregation levels, these two groups are being especially affected by the crisis, with unemployment rates around 30 percent in the second quarter of 2011 (Carlos Gradín and Coral del Río forthcoming). In an international context, Spain appears as a paradigmatic case of economic growth closely related to low-paid employment (mainly filled with immigrant workers; Alonso-Villar and del Río [forthcoming]). It would be interesting to explore the employment growth patterns of other European countries that are also strongly affected by the global crisis, such as Ireland and Greece, to investigate whether the results for Spain can be extrapolated there.

Coral del Río
Universidade de Vigo, Departamento de Economía Aplicada Fac. de CC Económicas, Campus Lagoas-Marcosende Vigo, Pontevedra 36310, Spain e-mail: crio@uvigo.es

Olga Alonso-Villar
Universidade de Vigo, Departamento de Economía Aplicada Fac. de CC Económicas, Campus Lagoas-Marcosende Vigo, Pontevedra 36310, Spain e-mail: ovillar@uvigo.es

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NOTES

1 Antonio Caparrós Ruiz and María Lucía Navarro Gómez (2008) make a first attempt to take immigration into account by showing the distribution of employed natives and immigrants in Spain across nine occupations. The international literature on segregation has mainly focused on gender segregation (Francine D. Blau, Patricia Simpson, and Deborah Anderson 1998), while differences by nationality/race, especially in Europe, have received less attention (Randy P. Albelda 1986; Mary C. King 1992; Jaai Parasnis 2006).
One exception is the paper by Coral del Río and Olga Alonso-Villar (2010), which analyzes the occupational segregation of several subgroups of women (divided by age, educational level, job type, and other characteristics). Note, however, that del Río and Alonso-Villar (2010) do not distinguish between immigrant and native women.

According to data from Spain’s National Institute of Statistics (Instituto Nacional de Estadística [INE] 2006), one out of two employed men in a heterosexual marriage with one or more children leaves all responsibility for the children to his wife.

In the second quarter of 2007, the EPA gathered information on 166,674 individuals, 70,506 of whom were employed (INE 2007). The methodology of the survey was modified in the first quarter of 2005, in particular, to take into account the increase of non-Spanish residents in Spain.

By immigrant population, we mean those persons born outside of Spain and also those born in Spain with foreign or dual nationality. This allows us to include second-generation immigrants in the study. The reason for this is that the performance of this group could be different from that of individuals who have only Spanish nationality so long as the former can be perceived by employers as non-Spanish citizens. This group represented only 0.87 percent of employed immigrants in the dataset used (INE 2007); therefore, its inclusion in the immigrant group should not have a great effect on the results.

We considered three educational groups: low-educated (those who had not finished secondary school); intermediate-educated (those who had completed secondary school); and highly educated (those who had a college degree or a degree in vocational training).

The segregation curve is similar to the Lorenz curve used in the literature on income distribution.

In a binary context, the (overall) segregation curve is obtained by comparing the distribution of one population subgroup among organizational units with that of the other subgroup. (This curve was initially proposed by Duncan and Duncan [1955].)

These differences also appear in the literature on income distribution when this literature measures inequality and poverty with indices consistent with the Lorenz and TIP (Three I’s of Poverty) criterion, respectively.

This index is an extension of the index Henri Theil and Anthony J. Finizza (1971) previously proposed in a dichotomous context.

Regarding immigrant men, 39 percent worked in construction while 34 percent were distributed among manufacturing, retail trade, and accommodations and catering.

Note that in 2007, construction was an important sector of the Spanish economy. During the real estate boom, which took place between 1998 and 2006, this sector accounted for approximately one-fourth of economic growth (Julio Rodríguez López and Erica Fellinger Jusué 2007).

We considered occupations at a two-digit level of the National Classification of Occupations (INE 1994), which includes sixty-six occupations.

Even though Appendix Table 2 does not show the top ten occupations with the highest relative presence of native women, we find that the presence of immigrant women was very low in the two occupations with the highest wage (professions associated with a first cycle university degree in health and professions associated with a first-cycle university degree in teaching).

The difference among these indices can be explained as follows: $M$ index gives more importance to the fact that there were many occupations in which immigrant women were rarely employed than the other two overall indices do.

The concentration of immigrant men from these regions in occupations with a high presence of immigrant men was not so strong (the figure is available upon request from the authors).
This result is also found in the case of immigrant men, even though, in their case the segregation curve of those coming from the EU was closer to the curve of Latin American and Asian men than in the case of women (the figure is available upon request from the authors).

Note that the “Rest of the world” had the highest occupational segregation, even though, as previously mentioned, we must be careful about drawing conclusions for this group given its small weight.

See Appendix Table 3, which shows that women from all large regions, excluding the EU bloc, tended to work, to a large extent, as domestic employees and the like. We also observe that women from the EU bloc (together with those from the “Rest of the world”) clearly departed from the remaining groups. All of the above suggests that both supply and demand factors played a role in determining the occupational segregation of immigrants.

REFERENCES


### Appendix Table 1 Distribution of employed immigrants and natives among branches of activity (2007)

<table>
<thead>
<tr>
<th>Branches of activity</th>
<th>Natives</th>
<th>Immigrants</th>
<th>EU-25 and others</th>
<th>Rest of Europe</th>
<th>Latin America</th>
<th>Africa</th>
<th>Asia</th>
<th>Rest of the world</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
</tr>
<tr>
<td>1. Agriculture, livestock, hunting, and forestry</td>
<td>2.8</td>
<td>4.9</td>
<td>3.1</td>
<td>7.2</td>
<td>1.9</td>
<td>3.1</td>
<td>6.8</td>
<td>11.2</td>
</tr>
<tr>
<td>2. Fishing</td>
<td>0.1</td>
<td>0.4</td>
<td>0.0</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>3. Extractive industries</td>
<td>0.1</td>
<td>0.5</td>
<td>0.0</td>
<td>0.6</td>
<td>0.0</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>4. Manufacturing industry</td>
<td>10.1</td>
<td>20.1</td>
<td>5.7</td>
<td>13.5</td>
<td>9.5</td>
<td>16.0</td>
<td>6.0</td>
<td>14.2</td>
</tr>
<tr>
<td>5. Production and distribution of electrical energy, gas, and water supply</td>
<td>0.3</td>
<td>0.8</td>
<td>0.0</td>
<td>0.4</td>
<td>0.5</td>
<td>0.2</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>6. Construction</td>
<td>2.0</td>
<td>18.1</td>
<td>1.1</td>
<td>38.7</td>
<td>0.9</td>
<td>23.1</td>
<td>0.7</td>
<td>54.5</td>
</tr>
<tr>
<td>7. Commerce; repair of motor vehicles and domestic use articles</td>
<td>18.9</td>
<td>15.8</td>
<td>13.3</td>
<td>10.3</td>
<td>15.2</td>
<td>10.3</td>
<td>9.7</td>
<td>4.8</td>
</tr>
<tr>
<td>8. Accommodation and catering</td>
<td>7.7</td>
<td>4.7</td>
<td>19.7</td>
<td>9.8</td>
<td>11.4</td>
<td>11.2</td>
<td>24.4</td>
<td>3.6</td>
</tr>
<tr>
<td>9. Transport, storage, and communications</td>
<td>3.4</td>
<td>7.9</td>
<td>3.1</td>
<td>6.1</td>
<td>6.9</td>
<td>10.9</td>
<td>1.5</td>
<td>5.9</td>
</tr>
<tr>
<td>10. Financial intermediation</td>
<td>3.1</td>
<td>2.5</td>
<td>1.2</td>
<td>0.5</td>
<td>3.1</td>
<td>1.0</td>
<td>0.5</td>
<td>0.2</td>
</tr>
<tr>
<td>11. Real estate and rental activities; business services</td>
<td>12.2</td>
<td>8.9</td>
<td>10.6</td>
<td>5.8</td>
<td>15.2</td>
<td>10.4</td>
<td>6.3</td>
<td>2.2</td>
</tr>
<tr>
<td>12. Public administration, defense, and compulsory Social Security</td>
<td>7.1</td>
<td>7.0</td>
<td>1.1</td>
<td>1.1</td>
<td>3.2</td>
<td>2.8</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>13. Education</td>
<td>10.1</td>
<td>3.7</td>
<td>3.3</td>
<td>1.3</td>
<td>13.1</td>
<td>4.9</td>
<td>0.2</td>
<td>0.0</td>
</tr>
<tr>
<td>14. Health and veterinary activities; social services</td>
<td>12.4</td>
<td>2.6</td>
<td>5.1</td>
<td>1.2</td>
<td>6.9</td>
<td>1.5</td>
<td>1.8</td>
<td>0.5</td>
</tr>
<tr>
<td>15. Other social activities and services provided to the community; personal services</td>
<td>5.5</td>
<td>3.6</td>
<td>4.3</td>
<td>2.6</td>
<td>6.7</td>
<td>3.4</td>
<td>3.5</td>
<td>1.5</td>
</tr>
<tr>
<td>16. Households that employ domestic personnel</td>
<td>4.3</td>
<td>0.4</td>
<td>28.4</td>
<td>0.9</td>
<td>4.9</td>
<td>0.5</td>
<td>38.6</td>
<td>1</td>
</tr>
<tr>
<td>17. Extraterritorial institutions</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.0</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Note:** All figures are expressed in percentages.  
**Source:** Authors’ calculations based on 2007 EPA (INE 2007).
### Appendix Table 2
Distribution of employed immigrants and natives among occupations with the highest and lowest presence of immigrant women (2007)

<table>
<thead>
<tr>
<th>Immigrant women’s employment/total employment</th>
<th>Immigrant women</th>
<th>Native women</th>
<th>Immigrant men</th>
<th>Native men</th>
<th>Employment share</th>
<th>Wage/median wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic employees and other indoor cleaning personnel</td>
<td>38.3</td>
<td>35.6</td>
<td>10.8</td>
<td>1.5</td>
<td>0.5</td>
<td>6.6</td>
</tr>
<tr>
<td>Catering services</td>
<td>22.0</td>
<td>15.0</td>
<td>5.0</td>
<td>7.4</td>
<td>2.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Personnel service workers</td>
<td>15.3</td>
<td>8.5</td>
<td>8.4</td>
<td>0.6</td>
<td>1.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Employees in direct contact with the public in travel agencies; receptionists, telephone operators</td>
<td>13.5</td>
<td>2.0</td>
<td>1.9</td>
<td>0.4</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Manufacturing industry laborers</td>
<td>13.5</td>
<td>2.0</td>
<td>1.2</td>
<td>1.1</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Cashiers, tellers, and similar personnel in direct contact with the public</td>
<td>11.6</td>
<td>2.0</td>
<td>2.2</td>
<td>0.4</td>
<td>0.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Agricultural, livestock, and fishing laborers</td>
<td>11.5</td>
<td>2.6</td>
<td>1.0</td>
<td>5.6</td>
<td>1.1</td>
<td>1.6</td>
</tr>
<tr>
<td>Retail workers and the like</td>
<td>9.1</td>
<td>6.4</td>
<td>9.1</td>
<td>1.9</td>
<td>2.6</td>
<td>5.0</td>
</tr>
<tr>
<td>Food, beverage, and tobacco industry workers</td>
<td>8.5</td>
<td>1.2</td>
<td>1.0</td>
<td>1.3</td>
<td>0.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Assistant clerks (without customer service tasks not classified previously)</td>
<td>5.5</td>
<td>1.6</td>
<td>4.1</td>
<td>0.4</td>
<td>1.0</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>76.9</td>
<td>44.7</td>
<td>20.6</td>
<td>11.8</td>
<td>28.3</td>
<td><strong>(continued)</strong></td>
</tr>
</tbody>
</table>
## Appendix Table 2 (Continued)

<table>
<thead>
<tr>
<th>The bottom ten occupations (with employment shares $\geq$ 1 percent) with the lowest presence of immigrant women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrant women’s employment/total employment</td>
</tr>
<tr>
<td>85. Locomotive machinist, operators of agricultural machinery and mobile heavy equipment, and seamen</td>
</tr>
<tr>
<td>71. Structural construction workers</td>
</tr>
<tr>
<td>76. Mechanics and adjusters for electric and electronic machinery and equipment</td>
</tr>
<tr>
<td>96. Construction laborers</td>
</tr>
<tr>
<td>72. Mechanics and adjusters for electric and electronic machinery and equipment</td>
</tr>
<tr>
<td>96. Construction laborers</td>
</tr>
<tr>
<td>60. Skilled agricultural workers</td>
</tr>
<tr>
<td>50. Physical sciences, chemistry, and engineering technicians</td>
</tr>
<tr>
<td>40. Accounting, finance services employees, and production and transport support services employees</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
</tr>
</tbody>
</table>

**Note:** Occupation codes follow the nomenclature of the National Classification of Occupations (INE 1994). All figures in columns 2–7 are expressed in percentages. **Source:** Authors’ calculations based on 2007 EPA (INE 2007).
### Appendix Table 3 Distribution of immigrant women of each large region among occupations with the highest presence of immigrant women (2007)

<table>
<thead>
<tr>
<th>Immigrant women</th>
<th>Women from EU-25 and others</th>
<th>Women from rest of Europe</th>
<th>Latin American women</th>
<th>African women</th>
<th>Asian women</th>
<th>Women from rest of the world</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic employees and other indoor cleaning personnel</td>
<td>35.6</td>
<td>10.6</td>
<td>46.0</td>
<td>39.9</td>
<td>31.4</td>
<td>29.7</td>
</tr>
<tr>
<td>Catering service workers</td>
<td>15.0</td>
<td>7.7</td>
<td>22.2</td>
<td>13.7</td>
<td>19.6</td>
<td>21.6</td>
</tr>
<tr>
<td>Personnel service workers</td>
<td>8.5</td>
<td>7.5</td>
<td>4.1</td>
<td>10.8</td>
<td>6.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Employees in direct contact with the public in travel agencies; receptionists, telephone operators</td>
<td>2.0</td>
<td>4.7</td>
<td>0.7</td>
<td>1.7</td>
<td>2.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Manufacturing industry laborers</td>
<td>2.0</td>
<td>1.4</td>
<td>3.4</td>
<td>1.5</td>
<td>4.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Cashiers, tellers, and similar personnel in direct contact with the public</td>
<td>2.0</td>
<td>1.5</td>
<td>1.6</td>
<td>2.3</td>
<td>2.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Agricultural, livestock, and fishing laborers</td>
<td>2.6</td>
<td>1.0</td>
<td>5.9</td>
<td>2.2</td>
<td>1.6</td>
<td>0.0</td>
</tr>
<tr>
<td>Retail workers and the like</td>
<td>6.4</td>
<td>7.5</td>
<td>3.2</td>
<td>6.8</td>
<td>6.2</td>
<td>12.3</td>
</tr>
<tr>
<td>Food, beverage, and tobacco industry workers</td>
<td>1.2</td>
<td>0.7</td>
<td>2.2</td>
<td>1.0</td>
<td>1.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Assistant clerks (without customer service tasks not classified previously)</td>
<td>1.6</td>
<td>3.8</td>
<td>1.2</td>
<td>1.0</td>
<td>2.1</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>76.9</td>
<td>46.4</td>
<td>90.5</td>
<td>80.9</td>
<td>78.2</td>
<td>70.0</td>
</tr>
</tbody>
</table>

**Notes:** Occupation codes follow the nomenclature of the National Classification of Occupations (INE 1994). All figures are expressed in percentages.  
**Source:** Authors’ calculations based on 2007 EPA (INE 2007).