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THE IMPACTS OF SOCIAL NETWORKS ON IMMIGRANTS' EMPLOYMENT PROSPECTS: THE SPANISH CASE 1997–2007

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Abstract

This paper studies the extent to which social networks influence the employment stability and wages of immigrants in Spain. By doing so, I consider an aspect that has not been previously addressed in the empirical literature, namely the connection between immigrants' social networks and labor market outcomes in Spain. For this purpose, I use micro-data from the National Immigrant Survey carried out in 2007. The analysis is conducted in two stages. First, the impact of social networks on the probability of keeping the first job obtained in Spain is studied through a multinomial logit regression. Second, quantile regressions are used to estimate a wage equation. The empirical results suggest that once the endogeneity problem has been accounted for, immigrants' social networks influence their labor market outcomes. On arrival, immigrants experience a mismatch in the labor market. In addition, different effects of social networks on wages by gender and wage distribution are found. While contacts on arrival and informal job access mechanisms positively influence women's wages, a wage penalty is observed for men.

Keywords: Immigration, Labor market, Social Networks, Quantile regression, Semi-parametric estimations

JEL Code: J15, J31, J61, C14

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I. INTRODUCTION

The immigrant population in Spain has largely increased over the past decade, from 2.3% of the total population in 2000 to 10% in 2007. This large immigration inflow has turned Spain into the second largest recipient of immigrants after Germany in the European context (OECD, 2010). The social relevance of this new phenomenon has turned the immigration process into a key subject of social and economic research. Different studies have focused on the assimilation process and occupational mobility of immigrants in Spain (Izquierdo et al., 2009; Alcobendas and Rodríguez Planas, 2009, Simón et al., 2011). However, less attention has been paid to the role of social networks on immigrants' behavior.

Empirical and theoretical studies point out the influence of social networks in various areas of social and individual behavior, such as labor market performance, education attainment, and crime among others (Jackson, 2008; Wahba and Zenou, 2005). The social network literature highlights two mechanisms that could affect individual behavior: information and norms (Bertrand et al., 2000). The first channel refers to how a person's knowledge depends on the behavior of others. The second channel emphasizes how a person's preferences may depend on the behavior of others, either directly by affecting taste or indirectly via social pressure. Both mechanisms stress how nonmarket interactions can influence aggregate outcomes.

In this paper, the focus is on the effects of social networks on the job quality an immigrant finds, mainly because social and economic integration largely depends on an immigrant's labor market outcomes. The social network literature agrees on the positive impacts of strong and weak ties on the rate at which jobseekers receive employment offers.[2] Moreover, the quality of the members of the network influence the quality of the job an immigrant could find (Calvó-Armengol and Jackson, 2004). Moreover, that strong dependence on the social network could isolate immigrants from the native population and from the organizations and institutions in the host country. In the long run, immigrants' enclaves may develop, reflecting social and economic disintegration.

Despite the growing empirical literature, no consensus on the impacts of social networks on job quality has yet been reached (Ioannides and Loury, 2004). Dustmann et

[2] Close or strong ties refer to the strength of the network. Close ties include family and friends, while weak ties are expressed in terms of a lack of overlapping in personal networks between any two agents (e.g. professional acquaintances).

al. (2010) show that through referrals, social networks reduce informational deficiencies in the labor market, leading to better quality matches between workers and firms. Some authors argue that immigrants with social resources obtain more advantageous occupational positions, as friends and relatives sort through jobs to reserve the better ones for their network's members (Aguilera and Massey, 2003; Nee and Sanders, 2001). Conversely, Bentolila et al. (2010) find that worker/job matches tend to be poorer for jobs found through the network. In a similar line, Ottaviano and Peri (2006) point out that job matches depend on the strength of the network. They argue that mismatch happens if social networks are based on close ties because relatives and friends are unrelated to the individual's previous experience or training. Instead, good matches can happen if job information is transmitted through professional affiliations.

The main objective of this paper is to analyze to what extent social networks affect immigrants' labor market outcomes in terms of employment stability and wages in Spain. First, I study the impacts of social networks on the probability of keeping the first job. An immigrant's social networks are measured through contacts on arrival, participation in social organizations, and a proxy of network size, measured as the proportion of immigrants of the same origin country living in the same Autonomous Community on the total immigrant population in the Autonomous Community. Further, I consider informal and formal job access mechanisms.[3] Then, the effects of social networks on wages are estimated for immigrants who keep their first jobs. A wage equation is estimated through both ordinary least squares (OLS) and quantile regressions (QRs) controlling for sample selection bias. In this case, a separate analysis is conducted for women and men.

For this purpose, this paper uses the National Immigrant Survey (ENI, its Spanish acronym), a single and unique cross-sectional national representative survey on immigration carried out in 2007. The richness of this dataset relies on the retrospective information contained, especially on individuals' labor market characteristics at three moments in time: before arriving in Spain, upon arrival, and at the moment of the survey.

The results show that social networks have statistical and significant effects on employment stability and wages. The probability of keeping the first job decreases for

[3] Formal sources of information include state and private employment agencies, newspaper advertisements, union hiring halls, and school and college placement services. Informal sources refer to referrals from employees and employers, direct inquiries by jobseekers, and indirect ones through social connections such as family and friends.

immigrants who have contacts on arrival and for those who used a social network to obtain the first job. Conditional on finding the first job through social networks, the probability of keeping the first job increases for immigrants with close ties relative to those without close ties. Finally, different effects of social networks on wages by gender are found. Wage premiums are observed for women who obtained the first job through personal contacts or those who had contacts on arrival, while wage penalties are observed for those men that either had close ties or obtained the first job through social networks. In addition, conditional on having obtained the job through social networks, women with close ties present a wage penalty relative to those without close ties.

The contribution of this paper is threefold. First, it contributes to the literature by estimating the extent to which the mechanisms through social networks affect the employment stability and wages of immigrants living in Spain. To my knowledge, this is the first paper that studies the relationship between social networks and employment on one hand, and the effects of social networks on wages on the other, of immigrants living in Spain. Second, I exploit a novel methodology for the study of social network effects on wages through QRs with sample selection bias in a semi-parametric fashion using a two-step procedure similar to that suggested by Heckman (1979). Finally, the richness of the ENI, with retrospective information on individuals' labor market characteristics and histories, enables me to address the potential unobserved endogeneity problem controlling for labor status and last occupation in the origin country.

The remainder of this paper is organized as follows. The next section introduces the empirical strategy. Section 3 describes the data and provides summary statistics for the key variables of interest. Sections 4 to 6 present the results of the analysis. Finally, the last section concludes.

II. METHODOLOGY

This section presents the empirical approach and identification strategy. The analysis is conducted in two steps. First, I study the effects of social networks on the probability of keeping the first job obtained in Spain (Section II.1.). Second, I analyze whether wage differences could arise for immigrants who maintain their first jobs due to the presence of close and weak ties and job access mechanisms (section II.2.).

II.1. PROBABILITY OF KEEPING THE FIRST JOB

First, I analyze the impact of social networks on the quality of the job matching process for immigrant workers. A "good" match is considered if the skills and qualifications of the worker are those required for the job. Then, if a good match between employers and employees takes place, a longer duration of the worker in the same job is expected. Duration models require information on contract job duration. Unfortunately, the required information is not provided by the ENI. Therefore, as an alternative to these models and based on the information contained in the ENI, the quality of the matching process is studied through the probability of maintaining the first job in Spain relative to not keeping it, namely relative to being employed in a different job, being unemployed, or being inactive.[4]

Other studies analyze the quality of the job match through a comparison of the last occupation in the country of origin and the occupation obtained in the country of destination (Mahuteau and Junankar, 2008), or by studying occupational mobility in the host country, comparing the first occupation and the actual occupation in the host country (Simón et al., 2011). However, this approach excludes from the study those immigrants that (i) do not have previous labor experience in the country of birth and (ii) those immigrants that despite having previous experience in the country of birth and a first job in Spain are actually unemployed or inactive. Therefore, the definition of the job matching process considered in this paper includes those immigrants that after

4 An individual is classified as "maintaining the first job" if he or she declares that the actual job is the first obtained in Spain. Specifically, the ENI (2007) asks for actual labor status in Spain. If the individual declares being employed, then he or she is asked if this is the first job obtained in Spain. If the answer is "yes", the individual is considered to currently be in the first job. Conversely, if he or she answers negatively, then I consider he or she has had a different job since arrival. Employment stability is observed if the immigrant is employed in the first job obtained in Spain.

having a first job in Spain are now unemployed or out of the labor market, thereby reflecting a bad match.

The hypothesis to test is that the probability of keeping the first job is affected by immigrants' close ties and weak ties as well as the job search mechanisms used to obtain the first job in Spain. Depending on the relationship found between social networks and employment stability (positive or negative), this would reflect the positive or negative impact of social networks on the quality of the job matching process between workers and employers.

To assess the relationship between social networks and labor market status I use the following multinomial logit regression:

$$P(Y = j|X) = \frac{\exp\left(\beta'_j X\right)}{\sum_{j=0}^{J} \exp\left(\beta'_j X\right)}$$

where $P(Y = j|X)$ is the probability of observing the $j \in \{0, J\}$ outcome of the dependent variable Y conditional on the vector X of independent variables. β_j is the vector of regression coefficients to be estimated by the maximum likelihood method.

In this study, the key dependent variable (Y) measures four possible labor market statuses, namely being employed in the first job obtained in Spain, being employed in a different job, being unemployed, or being inactive.[5] The independent variables of interest are the immigrant social networks in the host country and job access mechanisms for the first job.[6]

I consider different measures of the strength of immigrants' networks. Close ties is a dummy variable that refers to whether the immigrant had at least one relative or friend on arrival in Spain. As Goel and Lang (2011) point out, this makes network strength exogenous to the individual's subsequent labor market experience. The other two measures used in the literature refer to weak ties: participation in social organizations distinguishing those devoted exclusively to immigrants and those not, while the proportion of immigrants of the same country of birth living in the same

[5] Inactive means those immigrants actually studying or involved in non-waged household activities, excluding retirees.

[6] The mechanisms considered are formal methods and social networks. The translated question of the ENI (2007) reads: *By what means did you obtain your first job?* Respondents can choose many options, one of which is *through family, friends, or other contacts*. Throughout this text, network jobs and having obtained the first job through social networks are used interchangeably, as are formal jobs and having obtained the first job through formal channels.

region of the total immigrant population in the region is a proxy of network size (Munshi, 2003; Wahba and Zenou, 2005; Kahanec and Mendola, 2008).[7] Because the ENI is only representative at the national level, the Municipal Register (*Padrón Municipal de Habitantes*) for 2007 was used to calculate the proportion of immigrants by country of birth in the different Autonomous Communities of Spain of the total immigrant population in each Autonomous Community.[8]

Besides the key variables of interest, the vector of independent variables *X* includes socio-demographic characteristics (age, gender, education, region of origin, region of residence, educational attainment, legal residence authorization), migration experience (internal migration in Spain), and first job characteristics in Spain (such as activity sector and occupation). In addition, variables referring to immigrants' labor market statuses and occupations in the country of origin are included. These variables are included in order to control for potential unobserved heterogeneity. In this sense, identifying the effect of social networks is difficult because unobserved individual attributes can be correlated with employment status or the quality of the job found. Therefore, the estimated effect could be biased and may not be attributable to a network effect. To deal with potential endogeneity I use the retrospective information available in the ENI.

Another source of concern could be sample selection. Because the individuals considered in this analysis are those with some experience in the Spanish labor market, sample selection bias could arise. In order to correct for this problem a two-step adopted Heckman procedure for logistic regression is implemented, which consists of a two-step estimator and a maximum likelihood estimator (Durbin and Rivers, 1990). In the first step, the probability of having any experience in the Spanish labor market is estimated. The probability that an individual has worked is modeled as a function of individuals' socio-demographic characteristics, social networks, internal mobility, and motives for migration. From this equation, the Mills ratio is estimated. The second step estimates the probability of those immigrants in the labor market being in one of the four outcomes stated before but including the correction coefficient (obtained through the Mills ratio) as an additional covariate.

[7] Social participation in both kinds of organizations is a dummy variable that takes a value of one if the individual participates in a particular kind of organization (exclusive or not to immigrants) and zero otherwise.

[8] An Autonomous Community is a first-level political and administrative division of Spain.

The source of identification that appears in the selection equation but not in the second equation includes two dummy variables, which refer to migration motives: family regrouping and labor motives.[9] On one hand, individuals migrating for family reasons may be less prone to work (as they are expected to engage in non-remunerated household activities). On the other hand, given that they have at least one family member when arriving in the host country, it may be easier for them to access job information. In addition, previous studies show that immigrants could have different labor market outcomes depending on the reason for migration (Jasso and Rosenszweig, 1995; Aydemir, 2011), reinforcing the exclusion restriction used in this study. In particular, for the Spanish case, Rodríguez-Planas and Vegas (2012) find that Moroccan immigrants who declare regrouping motives are less prone to work than are immigrants declaring labor motives.

Furthermore, migration motives are not expected to affect quality of job match or employment duration. In formal terms, a good job match depends on workers' supply-side efforts, the number of workers offering those services in the job market, and the demand for their skills and qualifications. Clearly, having good educational qualifications or prior work experience favors a good job match. For immigrant workers, language proficiency and years living in the destination country are also important issues. Reinforcing this exclusion restriction, Aydemir (2011) shows in the Canadian context that immigrants' labor market outcomes highly depend on their skill levels and on the transferability of those skills rather than visa categories.

II.2. WAGE DIFFERENTIALS AMONG IMMIGRANTS WHO KEEP THE FIRST JOB

Next, I test whether wage differences could arise between immigrants who maintain their first jobs due to the strength of an immigrant network and the job access mechanisms used to find the job. The hypothesis to test is that conditional on keeping

[9] The ENI contains self-reported information on the reason for migration, namely due to the presence of a family member or labor motives. As the question in the ENI allows for multiple responses, regrouping motives considers those immigrants that declare family reunion as a motive for immigration, although they could state another motive for migration. Labor motives is a dummy variable that is equal to one if the immigrant declares job searching or looking for a better job as a motive for migration. Further, migration motives were interacted with the region of origin and gender variables in the first equation and did not change the final estimations obtained.

the first job in Spain, wage differentials could occur between those who found the job through formal or informal methods and between those with or without close and weak ties. The effect of social networks on wages is still a controversial issue in the empirical literature. While Bentolila et al. (2010) find a wage penalty for those workers who found their jobs through personal contacts, Pellizari (2010) shows that the use of social networks can lead either to a wage premium or to a wage penalty in different EU countries. The study of social networks effects on wages consists of estimating a wage equation of the following type:

$$(1) \qquad lnw_i = \left(1, NJ_i, CT_i, NJ_i * CT_i, NS_{ij}, SP_i, X_i\right).\gamma + u_i$$

where w_i is the hourly wage, NJ is a dummy equal to 1 if individual i used personal contacts to find the first job, and CT is a dummy equal to 1 if the individual had contacts on arrival. An interaction term between NJ and CT is included. NS_{ij}, represents the proportion of immigrants of the country of origin of individual i living in region j of the total immigrant population residing in region j. SP_i is a dummy equal to 1 if the individual participates in social mixed organizations, while X is a set of demographic and socio-economic controls and γ is a column vector with the parameters of the equation.

Equation (1) is estimated by OLS and QR. QRs, introduced by Koenker and Bassett (1978), estimate the conditional quantile function, namely models in which the quantiles of the conditional distribution of the response variable are defined as functions of observed covariates.[10] QRs are used because OLS implicitly assumes no important differences in terms of the impacts of the exogenous variables along the conditional distribution. Instead, if exogenous variables influence the parameters of the conditional distribution of the dependent variable other than the mean, then the analysis that disregards this possibility will be severely weakened. Unlike OLS, QR models allow for a full characterization of the conditional distribution of the dependent variable, bringing much value added if the relationship between the regressors and independent variables evolves across its conditional distribution. This flexibility has thus far been precluded from social networks' effects on wages in empirical studies, which has left unaddressed

[10] Similar to the OLS method, the parametric QR can be presented as the solution to a minimization problem. In this case, the asymmetrically weighted value of the residuals is considered to compute the parameters. For more details, refer to Koenker and Bassett (1978) and Koenker and Hallock (2001).

the possible impact of social networks upon inequality through its within-levels inequality component.

Because the sample is restricted to those immigrants still employed in the first job obtained in Spain, sample selection bias could emerge.[11] The methodology followed to address this issue is similar to the one proposed by Heckman (1979). This study is conducted separately for women and men in order to account for the different factors that may influence wages by gender.[12] First, I estimate the probability of keeping the first job in Spain (the selection equation), while second the wage equation regression is estimated. The source of identification included in the selection equation but not in the wage equation includes number of children at home, marital status, and last occupation in the origin country. The first two variables are standard in the literature of participation in the labor market, while the last has been shown to influence employment stability (see section IV) and be relevant in determining job mobility (Simón et al., 2011). Moreover, all variables in the selection equation are related to the probability of keeping the first job and unrelated to current wages, since wages strongly depend on actual labor market conditions in the host country and on a worker's human capital endowments.

The conventional Heckman correction method is applied to the OLS estimation. However, an analysis of the distribution of the error term in the selection equation is needed for QR because the conventional Heckman correction method assumes a standard normal distribution of the error term in the selection equation. If this assumption is violated, then semi-parametric methods should be applied to estimate the first equation, because this method does not rely on a distributional assumption (Buchinsky, 1998).

The wage equation with semi-parametric correction for sample selection bias is estimated following Buchinsky (1998). The QR equation is:

$$(2) \qquad Q_\theta(y|x_2) = x'\beta_\theta + h_\theta(x_1\gamma_0) \; \forall \; \theta \in (0,1)$$

[11] The sample is restricted because the ENI (2007) only provides wages for actual employment and does not provide information about the mechanisms through which the worker obtained the job. On the contrary, information on job access mechanisms is only given for the first job in Spain. As the aim of this study relies on both wages and job access mechanisms, the sample is restricted to those who keep the first job obtained in Spain.

[12] As the literature on the participation of women in the labor market points out, women's decisions to participate have important implications on their wages.

The vector x_1 is a set of observable characteristics that may affect the probability that an individual maintains the first job obtained in Spain. The term $h_\theta(x_1\gamma_0)$ corrects the selection at the θth quantile. Buchinsky (1998) suggests the following:

$$\hat{h}_\theta(x_1\gamma_0) = \delta_0(\theta) + \delta_1(\theta)\lambda(x_1\gamma_0) + \delta_2(\theta)\lambda(x_1\gamma_0)^2 + \cdots,$$

where $\lambda(.)$ is the inverse Mills ratio defined as $\lambda = \frac{\phi(.)}{\Phi(.)}$, while $\phi(.)$ and $\Phi(.)$ are the density and the c.d.f. of a standard normal variable, respectively.

The two-step semi-parametric method can be summarized as follows:

1. Estimate the probability of not changing the first job using the semi-parametric index proposed by Klein and Spady (1993).
2. Estimate the parameters in the QR including an approximation of the selective term as stated by Buchinsky (1998).

III. DATA AND DESCRIPTIVE ANALYSIS

This study uses the National Immigrants' Survey (ENI, its Spanish acronym), a single and unique cross-sectional national representative survey on immigration conducted so far only for 2007 by the National Statistics Institute (*Instituto Nacional de Estadísticas*). The sample is based on the Municipal Register. In total, the original survey comprises 15,441 individuals.[13] The ENI offers information on socio-demographic characteristics, migration experience, social networks, and labor market experience.[14] In particular, it features detailed information on activity condition before migration and at the moment of the survey and retrospective information on employment (e.g. occupation and activity sector) at three times: in the country of origin, first job on arrival, and current job in Spain. In addition, information on the finding methods used for the first job (social

[13] A response rate with respect to the effective sample eligible respondents of 87.4% was obtained. Interviews were conducted face-to-face, and for those informants unable to fill out the questionnaire in Spanish, a telephone line was set up (in Arabic and English).

[14] More detailed information on the design and contents of the ENI can be found at http://www.ine.es/daco/daco42/inmigrantes/inmigra_meto.pdf.

networks or formal methods) and income (amount of money an employee receives after all deductions), among others, is provided.

The original sample was restricted to immigrants that arrived in Spain after 1996. This constraint prevents selection bias in the analysis for different reasons. As Borjas (1985, 1995) states, cross-sectional estimates of immigrant performance in the host country could induce selection bias due to "cohort effects", namely changes in the composition or "quality" of immigrants arriving at different points in time or because of nonrandom return migration or migration to a third country. In addition, the business cycle could affect the results of labor market entrants and bias the estimation (Aslund and Rooth, 2007).[15] Considering the period between 1997 and 2007 minimizes these effects. Simón et al. (2011) also stress that during this period immigrant flows into Spain were relatively homogeneous in relation to their regions of origin. Further, the authors point out that the economic growth and strong job creation observed in this period reduce the effects of the economic cycle on immigrants' labor market situations and the importance of return migration relative to economic downturns.

This analysis only considers immigrants with labor market experience in Spain, between 14 and 64 years old at the time of the survey, and older than 13 and less than 57 years at the time of arrival. This selection excludes immigrants who finished their studies in Spain and focuses only on those who emigrated directly from their countries of birth to Spain. This leads to a final sample of 6,432 observations (9,009 observations were dropped).

Table 1 presents the summary statistics for the selected sample and for different immigrant groups. As can be seen, most immigrants come from Latin America (52%) followed by immigrants from Eastern Europe (26%), are on average 34 years old, and have around four years of residence in Spain. In terms of educational attainment, more than half of immigrants have at least a secondary level education, while approximately a quarter of the sample reports a tertiary education level. Region disparities arise when focusing on gender composition, educational attainment, and social network endowment. For the whole sample, there are more women than men (51% versus 49%), but immigrants from Asia, North Africa, Western Europe, and the rest of the world are predominantly men. Immigrants from North Africa, Asia, and the rest of the world are

[15] The literature addresses this issue through creating synthetic cohort of immigrants by tracking specific immigrant waves across decennial Censuses or across Current Population Surveys (Borjas, 1994). In the present study, the approach considered is analogous, since the ENI is a single cross-sectional database with a 10-year period of analysis.

less educated (28%, 31%, and 32%, respectively have a primary education level). More than 80% of immigrants from Latin America and Eastern Europe declare having contacts on arrival compared with those from Western European countries (75%). Conversely, Western European immigrants participate more in mixed organizations (18%), three times that for North African immigrants. Social participation in non-mixed organizations is relatively low for all groups, but immigrants from Asia and the rest of the world more than double the sample mean (14%, 17%, and 6%, respectively).

Table 2 presents the summary statistics for immigrants' first job characteristics in Spain. Around 80% of the immigrants that arrived between 1997 and 2007 have worked in Spain. More than 70% of them obtained their first jobs through social networks. Approximately 31% remain in their first jobs, while more than 50% have changed jobs. About half of these workers were first employed in non-skilled occupations and a quarter in administrative jobs. The main activities in which immigrants are involved in the first job are household activities, construction, and agriculture. Finally, regarding the occupational mobility of immigrants, it is worth noting that 35% of managers at the country of origin are employed in unskilled occupations in Spain, while the case is similar for professionals (36.6%). Workers from Western European countries experience less downward mobility relative to immigrants from other regions (Table A.3 in Appendix). This effect is explained in the literature because of the limited transferability of human capital between countries from non-developed European countries and the Spanish labor market (Simón et al., 2011).

IV. PROBABILITY OF KEEPING THE FIRST JOB IN SPAIN

Table 3 presents the probability of having some labor experience in Spain (the first step in Heckman's method for binary models). Relative to the key independent variables, contacts on arrival increase the probability of having some labor experience. However, network size or social participation in any kind of organization has no impact on the likelihood of having some labor experience. Being a woman, being married, the number of children in the household, tertiary education level attainment, belonging to a North African country, and declaring family regrouping as a motive for migration are all negatively related to the probability of having some experience in the Spanish labor

market. By contrast, years living in Spain, having legal residence authorization, having migrated for labor motives, and belonging to an Eastern European or a Latin American country all positively influence the probability of having some labor experience. A positive effect is also observed relative to internal migration in Spain.

The estimated multinomial regression after controlling for sample selection is shown in Table 4.[16] Because the coefficients obtained through the multinomial logit model do not measure the effect of the explanatory variables on the outcome probability directly, I focus on the results reported in Table 5, which shows the average marginal effects of the independent variables on the probability of each of the four labor statuses from the multinomial logit model.

First, the probability of keeping the first job decreases on the following variables: close ties (9.1 percentage points), having a first network job (7.9 percentage points), and social participation in a non-exclusive immigrant organization (more than 12 percentage points). On the contrary, conditional on having obtained the first job through social networks, immigrants with close ties increase by 8.3 percentage points the likelihood of keeping the first job in comparison to not having close ties. Further, network size raises the probability of keeping the first job by almost 20 percentage points. Second, close ties are associated with a 5.3 percentage point increase in the probability of being employed in a different job. First job access mechanisms, network size, and social participation in mixed organizations do not affect the probability of changing jobs.

Third, immigrants who have had a first network job are more prone to being unemployed (4.9 percentage points). Contacts on arrival, social participation in mixed organizations, and network size do not influence the likelihood of unemployment. For those immigrants with more years living in Spain and those who participate in social mixed organizations, the probability of unemployment decreases by 1.5 percentage points. Finally, a positive effect of close ties on the probability of being inactive is observed (3.5 percentage points), while immigrants with a first network job and with close ties are less prone to being inactive relative to those with a first network job and without close ties.

While the primary interest of this study is on social networks, a brief look at the results of the control variables is shown. The results reported in Table 5 are consistent

[16] All the results of the multinomial model are interpreted in relation to the omitted labor status: being employed in a different job from the first one obtained in Spain.

with previous findings in the literature. For example, being a woman increases the probability of unemployment or being inactive. Immigrants from Western Europe perform better in the Spanish labor market in comparison with other immigrants groups, while they are also more prone to keeping the first job and less prone to being unemployed. Negative and statistically significant effects of human capital endowment on the probability of being unemployed are further found. Immigrants with tertiary level education decrease by 3.4 percentage points the probability of being unemployed, while proficiency in the Spanish language decreases by 2.1 percentage points unemployment likelihood. Tenure in Spain decreases by 4.9 percentage points the probability of keeping the first employment. Furthermore, it increases by 4 percentage points the probability of job mobility. Having legal residence authorization increases the probability of changing jobs and decreases the likelihood of unemployment. Regions of destination have different impacts on labor status outcomes.

In addition, last occupation in the country of origin shows that skilled workers are more prone to changing the first job obtained in Spain and are less likely to being unemployed. Internal mobility in the Spanish territory also reduces the likelihood of unemployment. Being a manager or a qualified worker in the first job (in relation to being employed in an unskilled occupation) or being occupied in any sector except agriculture is positively associated with maintaining the first job. The sector of the first job, namely the construction, trade, or hotel sectors, also increases the probability of unemployment. In addition, those unemployed in the country of origin are more prone to being currently unemployed. Finally, immigrants who took less than a month to find the first job are less likely to keep it, showing that upon arrival workers prefer to quickly accept a job.

These results confirm the existence of a relationship between social networks and employment stability. Further, this relationship is negative for close ties and informal search channels for finding the first job. Conditional on having found the first job through social networks, immigrants with personal contacts upon arrival are more prone to keeping the first job compared with immigrants without close ties.[17] In light of the hypothesis stated, these findings could reflect a mismatch in the labor market for immigrants on arrival, showing that upon arrival immigrants prefer to quickly accept a job offered through a social network, even if it is not the most suitable given their

[17] A separate analysis was conducted for women and men. The results did not differ significantly on the key independent variables by gender.

education, training, or previous experience. This finding is reinforced by the negative coefficient of the time spent searching the first job. Those workers who spent less than a month looking for their first employment are less likely to keep the job and are more prone to change it. Once established in the host country, immigrants search for a new job more in accordance with their levels of education, previous experience, and training. It can also be stated that the social capital accumulated by the network is restricted to a particular segment of the labor market, in which case the new immigrant's job prospects are limited to this segment.

Similar conclusions are presented in Bentolila et al. (2010) for the US and Europe. According to these authors, workers have a natural talent for a specific occupation, which may not be the one to which their social contacts can provide referrals. In this scenario, workers may have to accept a trade-off; they may find it advantageous to find a job more quickly through their social networks, but they may also work in an occupation that does not maximize their productivity. The results are also in line with those presented by Simón et al. (2011) and Veira and Stanek (2009). Both studies find a U-shaped pattern in terms of occupational mobility for immigrants in Spain, characterized by occupational downgrading on arrival and a gradual improvement as the duration of residence in the host country increases. In addition, Veira and Stanek (2011) find ethnic niches in the Spanish labor market.

V. SOCIAL NETWORK EFFECTS ON WAGES

V.1. Women's case

Before equation (1) is estimated, I control for the possible selection bias arising from selecting workers that keep their first jobs in Spain. The source of identification that appears in the selection equation but not the wage equation includes number of children at home, marital status, and the last occupation in the origin country (see section II.2).

The selection equation is first estimated using a standard probit model (Table 6). After probit regression, the hypothesis of the normality of the residuals is rejected (Table 7); hence, the selection equation is estimated using the semi-parametric estimator proposed by Klein and Spady (1993) (Table 8). Then, keeping the first job is positively associated with age, being from Asia or the rest of the world, having had a first job in

the household sector, and never having worked or having been unemployed in the origin country. Conversely, age squared, number of children in the household, tenure in Spain, being from Latin America, North Africa, or Eastern Europe (in comparison with immigrants from Western Europe), having close ties, and having had a skilled occupation in the origin country (relative to unskilled occupations) all negatively affect the probability of keeping the first job in Spain (Table 6).

Table 8 reports the estimations of equation (1) by QR and OLS. The effect of social networks on wage differentials is only observed in the first quantile of the distribution. A wage premium is observed for women who used personal contacts to find the first job (10.1 log points) relative to those who found the first job through formal channels. In addition, women with close ties earn 10.8 log points more than women without close ties. The interaction term between close ties and network job is negative and statistically significant, showing that wages in network jobs are 15.6 log points lower for women with close ties than for women without close ties. Moreover, wages decrease with network size; this is observed in all quartiles of the distribution but is only statistically significant in the first quartile (more than 24 log points). Finally, immigrants participating in mixed organizations do not present wage differentials in comparison with those not participating in these organizations.

In the case of the estimates of the control variables, the results reported in Table 8 are in the direction one would expect. Immigrant women from Latin America, North Africa, and Asia present an increasing wage penalty over the wage distribution in comparison with women from Western Europe. Second, wage differentials are observed within the Spanish territory. Women living in Aragon, Cantabria, and Castilla La Mancha earn less than women residing in Madrid, while a positive effect on wages is observed for women living in Balears, Catalonia, and Rioja. Compared with immigrants with no residence authorization, those workers with legal residence authorization earn more. Moreover, wage premiums are observed for women with more years living in Spain and for those women employed in professional occupations. These effects can be observed for all quartiles of the distribution. Finally, the sector also influences wage differentials. A negative effect is observed in the first quartile and at the mean of the distribution for women employed in the household sector. On the contrary, women involved in trade activities or construction earn more than those working in the agriculture sector.

These results show the importance of social networks on wages, which are only statistically significant for the first quartile of the distribution. The positive impacts of close ties or the use of social networks as a job access channel could reflect the fact that women involved in low skilled occupations and more vulnerable sectors benefit from their social networks. However, network size penalizes wages in the first quartile of the distribution. In summary, social networks increase women's wages, but when the strong presence of immigrants from the same country of origin is observed in low occupational categories, this could indicate the presence of immigrant enclaves and, therefore, segmentation in the labor market, which results in wage penalties. In turn, this strong dependence on social networks may indicate a lack of access to formal institutions in the Spanish labor market.

V.II. Men's case

Before equation (1) is estimated, I control for the possible selection bias arising from selecting men workers that keep their first jobs in Spain (see section II.2). The selection equation is first estimated using a standard probit model. After probit regression, the hypothesis of the normality of the residuals is not rejected (Table 7), hence, a standard probit model is used to estimate the selection equation. Table 9 shows the results for the estimation of equation (1) for the men's analysis. In this case, the Heckman correction term is not statistically significant and thus no bias arises due to sample selection (Table 9).

Negative and statistically significant effects of close ties on wages are observed in the second and third quartiles of the wage distribution (12.3 log points and 12.2 log points, respectively). Workers employed in a network job earn less than workers that obtained their jobs through formal methods. This result is also observed for the first two quartiles of the wage distribution. Weak ties, network size, and social participation in non-exclusive organizations only penalize wages in the second quartile of the distribution. Conversely, workers in network jobs with close ties have higher wages relative to workers in network jobs without close ties (7.4 log points for the second quartile and 14.4 log points at the mean distribution).

The expected results are obtained for the other control variables. A wage premium is associated with age, tertiary education level, proficiency of Spanish, legal residence, and years living in Spain. In addition, being employed in skilled occupations

positively affects wages, increasing along the wage distribution, as does being employed in the construction sector or in business services for the median and third quartile (relative to the agriculture sector).

In summary, these findings reflect the fact that wage differences exist by gender among workers with and without ties and relative to first job access mechanisms. First, working in a network job or having personal contacts on arrival increases women's wages in the first quartile of the distribution. Conversely, men employed in a network job earn less than those working in a formal job. Second, for immigrants working in a network job, wage differences are observed for those workers with close ties relative to those without close ties. This effect is positive and statistically significant for women in the first quartile of the distribution, while it is negative for the second quartile of the distribution in the men's case. Third, social participation in non-exclusive immigrant organizations only penalizes men's wages in the second quartile of the distribution, while network size penalizes both women's and men's wages.

VI. CONCLUSIONS

The aim of this paper was to analyze the extent to which social networks influence immigrants' employment stability and wages in Spain. The findings reported in this paper indicate that having contacts on arrival, social participation in mixed organizations, and having obtained the first job through personal contacts are all negatively related to keeping the first job. The opposite effect is observed for immigrants with a first network job and with close ties in comparison to those with a first network job and without close ties as well as for the proportion of immigrants from the same country of origin living in the same Autonomous Community. In addition, the time taken to find the first job (less than a month) reduces the probability of keeping it.

Second, the presence of close ties increases the probability of changing employment or being inactive. Workers with a first network job are more prone to being unemployed than those with a first formal job. For immigrants with a first network job, those with close ties are less prone to being inactive than immigrants without close ties.

These results suggest that a mismatch takes place in the labor market for immigrants on arrival. Immigrants tend to quickly accept a job offered through a social

network, even if it is not the most suitable job given their levels of education, training, and previous experience. Once established in the host country, however, immigrants search for another job more in accordance with their human capital endowment.

Third, variables that account for human capital endowment such as education level, Spanish proficiency, and previous labor experience in skilled occupations in the country of origin all reduce the probability of being unemployed. In addition, the region of origin of the immigrant is an important factor that determines subsequent labor outcomes. Immigrants from Western European countries are more prone to keeping the first job and are less likely to being unemployed in comparison with immigrants from other regions.

Finally, different effects of social networks on wages by gender and wage distribution were found. Close ties or informal job access mechanisms increase women's wages in the first quartile of the distribution, but penalize men's wages in the first and second quartiles. Further, conditional on having obtained the job through social networks, women with close ties present a wage penalty relative to those without close ties, while the opposite results are found for men. Social participation in non-exclusive immigrant organizations only penalizes men's wages in the second quartile of the distribution, while network size penalizes both women's and men's wages.

In summary, two main factors influence immigrants' labor market outcomes. First, their great reliance on personal contacts as a job access mechanism is reflected in a mismatch in the labor market. Ottaviano and Peri (2006) argue that job mismatch could happen because jobs found through relatives and friends are often unrelated to the individuals' previous experience or training. This great dependence on social networks may also reflect segmentation in the host labor market as well as a lack of access to host labor market institutions. Second, immigrants with low endowments of human capital are more likely to be unemployed or employed in low skilled occupations.

In light of these results, some considerations must be made. First, it is important to stress that policies whose objectives are to accelerate the assimilation process or improve the labor market outcomes of immigrants not only have to focus on the individual (such as improving human capital endowments), but might also influence individuals' social backgrounds and the social networks within which an individual is embedded. In this sense, it is commonly observed that individuals' behavior is affected by that of their peers (Calvó-Armengol et al., 2009). Second, the adaptation process of immigrants to labor institutions should be addressed. Third, the actual economic context

of high unemployment in Spain, especially concentrated in low productive sectors and with a high concentration of immigrant workers, requires actions to improve the endowment of human capital in order to increase immigrants' productivity and job mobility in higher added value sectors.

Lastly, this study could be improved if information on the quality and size of the network were available in the ENI. This information would allow a better characterization of immigrants' social networks and a better comprehension of the mechanisms through which they operate.

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TABLES

Table 1. Descriptive Statistics. Sociodemographic Variables by region of origin (means values)

	Western Europe	Latin America	Eastern Europe	North Africa	Asia	Rest of the world	Total
Variables							
Female	0.47	0.59	0.57	0.28	0.35	0.27	0.53
Man	0.53	0.41	0.43	0.72	0.65	0.73	0.47
Age	36	34	33	33	33	33	34
Age^2	1410	1251	1174	1130	1142	1119	1224
Year of arrival	2002	2002	2002	2001	2001	2001	2002
Years since arrival	4	4	4	5	5	5	4
Married	0.37	0.47	0.54	0.59	0.59	0.56	0.50
Number of children	0.89	1.49	1.02	0.98	1.09	1.15	1.25
Residence authorization	1	1	1	1	1	1	1
Educational level attained (dummies variables)							
Primary level	0.14	0.19	0.13	0.28	0.31	0.32	0.18
Secondary level	0.50	0.58	0.67	0.39	0.39	0.39	0.57
Tertiary level	0.36	0.23	0.20	0.33	0.31	0.29	0.24
Speaks spanish	0.64	0.98	0.64	0.55	0.39	0.50	0.80
Migration between municipalities. Frecuency (%)							
1. Never moved	40.69	21.12	23.57	27.23	32.12	25.41	24.12
2. Moved once	29.65	39.99	37.59	30.99	28.47	34.05	37.31
3. More than one	29.65	38.88	29.65	41.78	39.42	40.54	38.56
Motives for migration [1]							
Labor motives	0.13	0.51	0.68	0.28	0.22	0.50	0.64
Family regrouping	0.40	0.31	0.27	0.39	0.48	0.30	0.27
Social networks							
Contacts at arrival (Close ties)	0.75	0.87	0.82	0.78	0.76	0.58	0.83
Social participation (exclusive for immigrants)	0.04	0.06	0.05	0.07	0.14	0.17	0.06
Social participation (mixed organization)	0.18	0.11	0.07	0.06	0.10	0.14	0.10
Frecuency (region of birth) Subsample (%)	7.18	51.82	26.06	9.93	2.13	2.88	100.00
Observations	3644	6059	2386	2018	437	643	6432

1. More than one motive could be chosen. The options given in the ENI (2007) are: being unemployed, search for a better job, quality, family regrouping, politic motives, religious motives, others. Labor motives includes being unemployed or search for a better job.

Table 2 Descritpive Statistics. Labor outcome in Spain

Variable	Obs	Mean	Std. Dev.
Labour experience in Spain	7377	87.19	
Dependent variables			
Frecuency (%)			
Maintain first job	6432	29.71	
Actual job different first job	6432	53.73	
Unemployed	6432	9.87	
Inactive[1]	6432	6.70	
First job characteristics (dummy variables)			
Job access mechanisms			
Social Networks	6432	0.70	0.46
Formal methods	6432	0.29	0.46
Occupation			
Manager	6432	0.01	0.11
Professional	6432	0.06	0.24
Paraprofessional[2]	6432	0.27	0.44
Skilled workers[3]	6432	0.18	0.39
Unskilled workers	6432	0.48	0.50
Sector of activity			
Agriculture	6432	0.16	0.36
Industry	6432	0.08	0.27
Construction	6432	0.15	0.36
Trade	6432	0.07	0.25
Hotel sector	6432	0.15	0.35
Transportation	6432	0.03	0.16
Business services	6432	0.06	0.24
Education- Health	6432	0.06	0.24
Household activities	6432	0.25	0.43
Public administration	6432	0.00	0.06
Last occupation in the country of birth (dummy variables)			
Manager	6432	0.04	0.21
Professional	6432	0.17	0.37
Paraprofessional[2]	6432	0.27	0.44
Skilled workers[3]	6432	0.24	0.43
Unskilled workers	6432	0.12	0.33
Never worked at origin	6432	0.15	0.35
Time before finding the first job (dummy variables)			
Jobs proposal before migration	6432	0.16	0.37
Less than one month	6432	0.40	0.49
Between 1 and 3 months	6432	0.19	0.39
Between 4 and 12 months	6432	0.17	0.37
More than one year	6432	0.04	0.21
Not known	6432	0.03	0.17

1. Inactive excludes those immigrants thar are retired.

2. Includes administrative workers, comercial salers, personal service workers.

3. Includes cualified workers employed in industrial or agricultural activities.

Table 3. Probability of labor experience and being actually participating in the Spanish labor market. Logit regression

Variable	Coefficient	SE
Independent variables		
Close ties	0.707***	(0.167)
Social participation in non mixed organizations	0.167	(0.241)
Social participations in mixed organizations	-0.111	(0.202)
Migrant proportion	0.619	(0.663)
Female	-1.021***	(0.133)
Age	0.255***	(0.041)
Age^2	-0.003***	(0.001)
Years since arrival (years)	0.335***	(0.035)
Residence authorization	0.825***	(0.143)
Educational level attained (reference: primary level or less)		
Secondary level	0.097	(0.166)
Terciary level	-0.320*	(0.172)
Speaks spanish	0.983***	(0.152)
Married	-0.485***	(0.129)
Number of children	-0.193***	(0.051)
Region of origin (reference: Western Europe)		
Eastern Europe	1.381***	(0.242)
Latin America	0.731***	(0.210)
North Africa	-0.535**	(0.231)
Asia	-0.166	(0.426)
Rest of the world	-0.322	(0.375)
Internal mobility (reference: never moved)		
Moved once	0.744***	(0.155)
More than once	1.069***	(0.161)
Motives for migration		
Labor	1.418***	(0.138)
Family regrouping	-0.811***	(0.133)
Constant	-5.829***	(0.742)
Observations		7377
Pseudo R2		0.379

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 4. Multinomial regression (base outcome: employed in a different job)

	All controls			No controls		
	First employment actual job	Unemployed	Inactive	First employment actual job	Unemployed	Inactive
Ommited: Employed in a different job						
Key independent variables						
Close ties (CT)	-0.484***	-0.080	0.598*	-0.465**	-0.156	0.647**
Network job (NJ)	-0.335	0.526*	0.418	-0.302	0.470*	0.463
CT*NJ	0.399*	-0.101	-0.753*	0.382	-0.001	-0.786*
Migrant proportion	0.999*	-0.286	-1.168	1.104**	-0.300	-1.090
Social participation in mixed organizations (SP)	-0.711**	0.419	0.024	-0.691**	0.495	0.038
SP*years	0.110	-0.147	0.002	0.105	-0.160	-0.003
Years since arrival (years)	-0.286***	-0.060*	0.018	-0.274***	-0.053	0.030
Control variables						
Female	0.252**	0.691***	2.239***	0.284**	0.724***	2.236***
Age	0.009	-0.022	-0.063	-0.022	-0.087*	-0.107*
Age^2	0.000	0.000	0.000	0.000	0.001	0.001
Married	0.044	-0.023	0.163	0.038	-0.034	0.140
Number of children	-0.041	0.061	0.089	-0.024	0.086*	0.098
Residence authorization	-0.170	-0.540***	-0.321*	-0.177*	-0.588***	-0.325*
Educational level attained (reference: primary level or less)						
Secondary level	-0.226*	-0.202	-0.127			
Terciary level	-0.014	-0.441**	-0.120			
Spanish language	-0.099	-0.290*	-0.001			
Region of origin (reference: Western Europe)						
Eastern Europe	-0.626***	0.040	-0.524	-0.602***	0.002	-0.576*
Latin America	-0.677***	-0.274	-0.575*	-0.726***	-0.386	-0.608**
North Africa	-0.386*	0.664**	-0.028	-0.252	0.706**	-0.023
Asia	0.013	-2.379***	-0.521	0.166	-2.160***	-0.447
Rest of the world	-0.330	0.630	-0.274	-0.212	0.750**	-0.257
Region of destination (reference: Madrid)						
Andalucía	0.378**	0.237	0.148	0.405**	0.255	0.132
Aragon	0.107	0.115	0.464	0.127	0.089	0.479
Asturias	0.656***	0.629	0.182	0.685***	0.607	0.204
Balears	0.415**	0.649***	0.603**	0.423**	0.587**	0.577**
Canarias	0.505**	0.019	0.195	0.496**	0.006	0.159
Cantabria	-0.143	0.510	0.106	-0.086	0.521	0.132
Castilla Leon	0.356*	0.214	0.507	0.398*	0.238	0.539
Castilla la Mancha	0.462**	0.628**	0.232	0.482**	0.687***	0.243
Catalonia	0.342**	0.098	-0.200	0.339**	0.057	-0.210
Valencian Community	0.186	0.417*	-0.016	0.156	0.420*	-0.026
Extremadura	0.440	0.703*	0.535	0.442	0.749**	0.491
Galicia	0.655***	0.815**	1.080***	0.639**	0.824**	1.043***
Murcia	0.165	0.501**	0.442	0.232	0.514**	0.456
Navarra	0.056	0.239	-0.335	0.060	0.183	-0.346
Basque Country	0.123	0.597**	0.175	0.107	0.653**	0.141
Rioja	0.158	-0.186	0.112	0.212	-0.084	0.121
Internal mobility (reference: never moved)						
1. Moved once	-0.831***	-0.334**	-0.341	-0.845***	-0.378**	-0.371*
2. More than one	-1.423***	-0.287*	-0.340	-1.442***	-0.346**	-0.366*

Table 4 Multinomial regression (cont.)

	All controls			No controls		
	First employment actual job	Unemployed	Inactive	First employment actual job	Unemployed	Inactive
First occupation (reference: unskilled occupation)						
Manager	1.775***	0.425	0.798	1.541***	0.377	0.886
Professional	0.164	0.155	0.658*	0.130	0.077	0.697*
Paraprofessional	-0.291**	-0.109	-0.007	-0.314**	-0.119	0.008
Cualified workers	0.450***	-0.142	0.234	0.403***	-0.220	0.224
Sector of activity (reference: Agriculture)						
Industry	1.073***	0.362	0.528	1.040***	0.360	0.556
Construction	1.042***	0.599**	0.579	1.009***	0.597**	0.580
Trade	1.314***	0.740**	0.535	1.238***	0.666**	0.564
Hotel sector	0.986***	0.787***	0.991***	0.930***	0.763***	1.012***
Transportation	1.020***	0.085	0.223	0.925***	0.028	0.203
Firm services	1.517***	0.496	0.231	1.441***	0.477	0.250
Education- Health	1.700***	-0.158	0.509	1.646***	-0.195	0.548
Household activities	1.008***	-0.169	-0.093	0.956***	-0.188	-0.060
Public administration	2.614***	3.710***	0.106	2.574***	3.416***	0.112
Time before finding the first job (less one month)	-0.226*	0.215	-0.270	-0.202*	0.254	-0.297
lambda2 (Heckman correction)	-0.148	0.138	0.320	-0.085	0.111	0.355
Activity before migration						
Unemployed at origin	-0.018	0.704***	-0.137			
Student at origin	-0.419**	0.332	0.256			
Last occupation in the country of birth (reference: unskilled worker)						
Manager	-1.232***	-0.153	-0.114			
Professional	-0.855***	-0.426*	-0.269			
Paraprofessional	-0.842***	-0.401*	-0.257			
Skilled workers	-0.773***	-0.629***	-0.321			
Never worked at origin	-0.504***	-0.265	-0.047			
Constant	1.539**	-0.775	-2.011*	1.178*	0.007	-1.527
Observations			6432			6432
Pseudo R2			0.156			0.145

* p<0.1, ** p<0.05, *** p<0.01

Table 5 Marginal effects

	All Controls				No controls at all			
	First employment actual job	Different job	Unemployed	Inactive	First employment actual job	Different job	Unemployed	Inactive
Independent interest variables								
Close ties (CT)	-0.091***	0.053*	0.003	0.035**	-0.087***	0.054	-0.004	0.038**
Network job (NJ)	-0.079**	0.009	0.049**	0.021	-0.073**	0.006	0.044*	0.023
CT*NJ	0.083**	-0.029	-0.014	-0.040**	0.079*	-0.031	-0.006	-0.042**
Migrant proportion	0.199**	-0.089	-0.043	-0.067	0.218**	-0.106	-0.048	-0.064
Social participation in mixed organizations (SP)	-0.124***	0.057	0.060	0.007	-0.126***	0.049	0.070	0.007
SP*years	0.023**	-0.008	-0.015*	-0.001	0.023**	-0.006	-0.016**	-0.001
Years since arrival (years)	-0.049***	0.040***	0.003	0.005***	0.047***	0.039***	0.003	0.006***
Other independent variables								
Female	-0.008	-0.124***	0.036***	0.096***	-0.002	-0.131***	0.038***	0.095***
Age	0.003	0.002	-0.002	-0.003	0.000	0.010	-0.006	-0.004
Age^2	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000
Residence authorization	-0.011	0.056***	-0.037***	-0.009	-0.011	0.061***	-0.041***	-0.009
Educational level attained (reference: primary level or less)								
Secondary level	-0.032	0.042*	-0.009	-0.001				
Terciary level	0.011	0.025	-0.034**	-0.002				
Spanish language	-0.010	0.027	-0.021*	0.003				
Married	0.006	-0.009	-0.004	0.007	0.006	-0.007	-0.005	0.006
Number of children	-0.010	0.000	0.005	0.004	-0.008	-0.004	0.007*	0.004
Region of origin (reference: Western Europe)								
Eastern Europe	-0.103***	0.095**	0.024	-0.015	-0.098***	0.096***	0.020	-0.018
Latin America	-0.102***	0.117***	0.000	-0.015	-0.109***	0.132***	-0.008	-0.015
North Africa	-0.086**	0.021	0.065**	0.000	-0.063*	0.000	0.065**	-0.002
Asia	0.074	0.124*	-0.188***	-0.010	0.095	0.093	-0.179***	-0.010
Rest of the world	-0.071	0.021	0.062**	-0.012	-0.054	-0.001	0.069**	-0.014
Region of destination (reference: Madrid)								
Andalucía	0.057**	-0.065**	0.008	-0.000	0.063**	-0.070**	0.009	-0.001
Aragon	0.009	-0.032	0.004	0.019	0.013	-0.034	0.001	0.020
Asturias	0.095**	-0.122***	0.032	-0.005	0.101**	-0.127***	0.030	-0.004
Balears	0.046*	-0.101***	0.037**	0.018	0.050*	-0.100***	0.033*	0.017
Canarias	0.084**	-0.073*	-0.013	0.002	0.085**	-0.071*	-0.014	0.000
Cantabria	-0.041	-0.007	0.044*	0.004	-0.031	-0.017	0.044	0.004
Castilla Leon	0.049	-0.070*	0.004	0.017	0.056	-0.079**	0.005	0.018
Castilla la Mancha	0.060*	-0.097***	0.037*	0.000	0.063*	-0.104***	0.042**	0.000
Catalonia	0.060**	-0.045*	-0.000	-0.015	0.061**	-0.043	-0.003	-0.015
Valencian Community	0.021	-0.044	0.029	-0.006	0.016	-0.041	0.030*	-0.006
Extremadura	0.050	-0.105*	0.041	0.014	0.050	-0.108**	0.046*	0.012
Galicia	0.077*	-0.153***	0.041	0.036**	0.075*	-0.153***	0.043	0.034**
Murcia	0.008	-0.057*	0.033*	0.015	0.020	-0.068**	0.033*	0.015
Navarra	0.008	-0.010	0.020	-0.018	0.011	-0.008	0.015	-0.018
Basque Country	0.003	-0.049	0.043*	0.003	-0.001	-0.050	0.050**	0.001
Rioja	0.031	-0.015	-0.020	0.004	0.038	-0.028	-0.013	0.003
Internal mobility (reference: never moved)								
1. Moved once	-0.152***	0.149***	0.002	0.001	-0.156***	0.156***	-0.000	0.000
2. More than one	-0.253***	0.225***	0.021	0.008	-0.259***	0.235***	0.017	0.008

Table 5 Marginal effects (cont.)

	All Controls				No controls at all			
	First employment actual job	Different job	Unemployed	Inactive	First employment actual job	Different job	Unemployed	Inactive
First occupation (reference: unskilled occupation)								
Manager	0.286***	-0.276***	-0.019	0.009	0.249***	-0.249***	-0.017	0.017
Professional	0.015	-0.046	0.004	0.027*	0.011	-0.039	-0.002	0.030*
Paraprofessional	-0.047**	0.044*	-0.001	0.004	-0.052**	0.048**	-0.001	0.006
Cualified workers	0.079***	-0.059**	-0.025	0.005	0.074***	-0.049*	-0.030*	0.006
Sector of activity (reference: Agriculture)								
Industry	0.169***	-0.173***	-0.003	0.007	0.166***	-0.172***	-0.002	0.009
Construction	0.157***	-0.181***	0.017	0.008	0.153***	-0.180***	0.018	0.009
Trade	0.200***	-0.223***	0.021	0.002	0.192***	-0.214***	0.017	0.004
Hotel sector	0.135***	-0.193***	0.031	0.027*	0.129***	-0.188***	0.031	0.029**
Transportation	0.171***	-0.145***	-0.022	-0.005	0.160***	-0.131**	-0.024	-0.004
Firm services	0.246***	-0.230***	-0.002	-0.014	0.238***	-0.224***	-0.002	-0.012
Education- Health	0.293***	-0.231***	-0.062**	0.000	0.288***	-0.226***	-0.064**	0.003
Household activities	0.181***	-0.123***	-0.040**	-0.018	0.175***	-0.118***	-0.041**	-0.015
Public administration	0.355***	-0.527***	0.227***	-0.055	0.359***	-0.515***	0.208***	-0.053
Time before finding the first job (less one month)	-0.049***	0.013	-0.022	-0.014	-0.047**	0.007	-0.025*	-0.015
lambda2 (Heckman correction)	-0.035	0.005	0.014	0.016	-0.023	-0.003	0.009	0.017
Activity before migration								
Unemployed at origin	-0.021	-0.027	0.058***	-0.010				
Student at origin	-0.090***	0.035	0.039**	0.017				
Last occupation in the country of birth (reference: unskilled worker)								
Manager	-0.126***	0.094**	0.027	0.005				
Professional	-0.050*	0.061**	-0.005	-0.006				
Paraprofessional	-0.049*	0.058**	-0.003	-0.006				
Cualified workers	-0.030	0.061**	-0.023	-0.008				
Never worked at origin	0.089***	-0.081**	0.002	-0.010				
Observations				6432				6432

* p<0.1, ** p<0.05, *** p<0.01

Table 6 Probability to participate in the Spanish labor market and with experience in the Spanish labor market. Women case

	Semiparametric model		Probit model	
	Coef.	SE	Coef.	SE
Close ties (CT)	-1.457***	(0.160)	-0.102	(0.069)
Age	0.450***	(0.056)	0.035*	(0.019)
Age^2	-0.003***	(0.000)	-0.000	(0.000)
Married	-0.024	(0.063)	0.058	(0.050)
No. Childrens	-0.754***	(0.095)	-0.071***	(0.022)
Years since arrival (years)	-3.218***	(0.357)	-0.199***	(0.012)
Residence authorization	-0.122	(0.079)	-0.095*	(0.056)
Eastern Europe	-0.524***	(0.134)	-0.313***	(0.104)
Latin America	-0.708***	(0.139)	-0.419***	(0.099)
North Africa	-2.16***	(0.296)	-0.177	(0.138)
Asia	4.123***	(0.478)	0.089	(0.210)
Rest of the world	5.443***	(0.646)	-0.286	(0.227)
Manager	-4.502***	(0.499)	-0.408***	(0.145)
Professional	-0.990***	(0.146)	-0.173*	(0.091)
Paraprofessional	-1.436***	(0.179)	-0.202**	(0.083)
Cualified workers	-1.524***	(0.201)	-0.204**	(0.101)
Never worked at origin	0.706***	(0.165)	0.061	(0.095)
Unemployed	0.426***	(0.100)	-0.112*	(0.067)
Household sector	1.247***	(0.159)	0.061	(0.050)
Constant			-0.052	(0.363)
Observations				3486

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 7. Test for normality of the residuals (CAMBIAR)

Lagrange Multiplier Test for Normality after Probit			
Women		*Men*	
Chi2(2) =	14.2669	Chi2(2) =	3.4028
Prob > chi2 =	0.0008	Prob > chi2 =	0.1824
Ho: Normality			
Ha: No Normality			

Table 8. Wage regression. Women analysis

Dependent variable: ln(wages per hour**)**

	QR 25	QR50	QR75	OLS
Key independent variables				
Network job (NJ)	0.101*	-0.003	-0.048	-0.062
Close ties (CT)	0.108**	0.030	0.003	-0.012
CT*NJ	-0.156**	-0.033	0.018	0.015
Migrant proportion	-0.248**	-0.181	-0.073	-0.131
Social participation in mixed organizations (SP)	0.109	-0.008	0.094	0.067
SP*years	-0.010	-0.006	-0.014	-0.000
Other controls				
Age	-0.005	-0.003	-0.003	-0.003
Age^2	0.000	-0.000	-0.000	-0.000
Residence authorization	0.101***	0.077*	0.081***	0.087**
Years since arrival (years)	0.053***	0.031	0.022	0.000
Educational level attained (reference: primary level or less)				
Secondary level	-0.059	-0.042	-0.110	-0.049
Terciary level	-0.032	-0.025	-0.083**	-0.043
Spanish language	-0.028	-0.006	0.024	0.011
Region of origin (reference: Western Europe)				
Eastern Europe	-0.021	-0.081	-0.107**	-0.079
Latin America	-0.100**	-0.196**	-0.225***	-0.162**
North Africa	-0.099	-0.195*	-0.323***	-0.255***
Asia	-0.113	-0.329**	-0.337***	-0.247*
Rest of the world	-0.438***	-0.372**	-0.332***	-0.369**
Region of destination (reference: Madrid)				
Andalucia	-0.075	0.053	0.108*	-0.014
Aragon	-0.150***	-0.049	0.117*	-0.007
Asturias	-0.062	-0.034	0.092	-0.012
Balears	0.159***	0.176**	0.185***	0.132**
Canarias	0.096	0.105	0.166**	0.103
Cantabria	-0.137*	-0.116	0.023	-0.093
Castilla Leon	-0.091	-0.068	0.033	-0.043
Castilla la Mancha	-0.127**	-0.028	0.003	-0.153**
Catalonia	0.199***	0.171***	0.181***	0.169***
Valencian Community	-0.087*	-0.034	0.066	-0.070
Extremadura	-0.040	-0.044	-0.070	-0.080
Galicia	-0.113	-0.063	-0.001	-0.087
Murcia	-0.025	0.025	0.106*	0.000
Navarra	0.077	0.081	0.218***	0.104
Basque Country	0.040	0.139	0.091	0.062
Rioja	0.131**	0.052	0.027	0.044

(Tabla 8 Cont.)

	QR 25	QR50	QR75	OLS
Actual occupation (reference: unskilled occupation)				
Manager	0.092	0.084	0.504***	0.265**
Professional	0.347***	0.360***	0.458***	0.326***
Paraprofessional	-0.028	0.037	0.010	-0.031
Cualified workers	-0.158**	-0.164	-0.073	-0.124
Sector of activity (reference: Agriculture)				
Industry	0.016	0.015	-0.003	-0.060
Construction	0.235*	0.031	0.058	0.076
Trade	0.128*	0.018	0.026	0.061
Hotel sector	0.084	-0.018	0.056	0.024
Transportation	-0.069	-0.116	0.314***	0.108
Firm services	-0.042	0.014	0.208***	0.076
Education- Health	-0.048	-0.024	0.084	0.008
Household activities	-0.194***	-0.130	0.007	-0.140*
Public administration	0.008	-0.063	-0.044	-0.021
Internal mobility (reference: never moved)				
1. Moved once	0.014	-0.018	-0.046	0.011
2. More than one	0.039	-0.020	-0.101***	-0.020
Time before finding the first job (less one month)	0.080**	0.065	0.059*	0.031
Heckman correction	-0.010*	0.001	0.005	-0.002
Constant	2.792***	3.121***	3.296***	3.153***
Observations	912	912	912	912
Adjusted R2				0.186

* p<0.1, ** p<0.05, *** p<0.01

Table 9 QR and OLS for men

Dependent variable: ln(wages per hour**)**

	QR 25	QR 50	QR 75	OLS
Independent Interest variables				
Network job (NJ)	-0.136*	-0.116***	-0.102	-0.169***
Close ties (CT)	-0.123*	-0.122***	-0.099	-0.158***
CT*NJ	0.076	0.074***	0.066	0.144**
Migrant proportion	-0.065	-0.189***	-0.197	-0.044
Social participation in mixed organizations (SP)	-0.006	-0.094***	-0.006	0.014
SP*years	0.000	0.031***	0.007	0.020
Other controls				
Age	0.013	0.018***	0.002	0.012
Age^2	-0.000	-0.000***	-0.000	-0.000
Residence authorization	0.017	0.043***	0.073	0.077**
Years since arrival (years)	0.026	0.020***	0.011	0.011
Educational level attained (reference: primary level or less)				
Secondary level	0.017	-0.001	0.039	0.035
Terciary level	0.070	0.094***	0.093**	0.135***
Speaks spanish	0.073	0.069***	0.043	0.051
Region of origin (reference: Western Europe)				
Eastern Europe	-0.078	-0.095***	-0.150**	-0.113*
Latin America	-0.144	-0.149***	-0.210***	-0.157**
North Africa	-0.173*	-0.218***	-0.327***	-0.239***
Asia	-0.157	-0.220***	-0.318***	-0.253***
Rest of the world	-0.227	-0.244***	-0.371***	-0.317***
Region of destination (reference: Madrid)				
Andalucia	0.044	-0.021	0.039	0.008
Aragón	0.047	-0.071***	-0.030	-0.046
Asturias	-0.012	-0.043	0.014	-0.089
Balears	0.105	-0.017	0.044	0.053
Canarias	0.072	-0.052**	0.058	0.015
Cantabria	-0.070	-0.148***	-0.061	-0.227**
Castilla Leon	-0.028	-0.155***	-0.141*	-0.100
Castilla la Mancha	0.029	0.025	0.010	-0.041
Catalonia	0.136**	0.096***	0.077	0.050
Valencian Community	0.016	0.031	0.011	-0.013
Extremadura	-0.263**	-0.179***	-0.199*	-0.073
Galicia	-0.409***	-0.351***	-0.243**	-0.278***
Murcia	0.093	-0.006	0.005	-0.018
Navarra	0.144*	0.075***	0.049	0.061
Basque Country	0.031	-0.105***	-0.089	-0.122
Rioja	0.151	0.045*	0.078	0.051

Table 9 (Cont.)

	QR 25	QR 50	QR 75	OLS
Actual occupation (reference: unskilled occupation)				
Manager	0.388***	0.407***	0.464***	0.402***
Professional	0.365***	0.327***	0.437***	0.383***
Paraprofessional	0.079	-0.057***	0.001	0.040
Cualified workers	0.081*	0.054***	0.046	0.070**
Sector of activity (reference: Agriculture)				
Industry	-0.016	0.058***	0.065	0.044
Construction	0.098	0.184***	0.167***	0.107**
Trade	-0.098	0.054***	0.104	-0.039
Hotel sector	-0.077	0.124***	0.058	-0.073
Transportation	0.021	0.149***	0.265***	0.149*
Firm services	0.048	0.192***	0.147*	0.085
Education- Health	-0.089	0.126***	0.245***	0.098
Household activities	-0.182	-0.142**	-0.329*	-0.211
Public administration	-0.183	-0.115**	-0.101	-0.311*
Time before finding the first job (less one month)	0.087**	0.065***	0.170***	0.138***
Internal mobility (reference: never moved)				
1. Moved once	0.032	0.010	-0.054	-0.029
2. More than one	0.064	0.035	-0.073	-0.029
Heckman correction	-0.099	-0.090	0.135	0.047
Constant	2.834***	2.931***	3.161***	2.933***
Observations	862	862	862	862
Adjusted R2				0.346

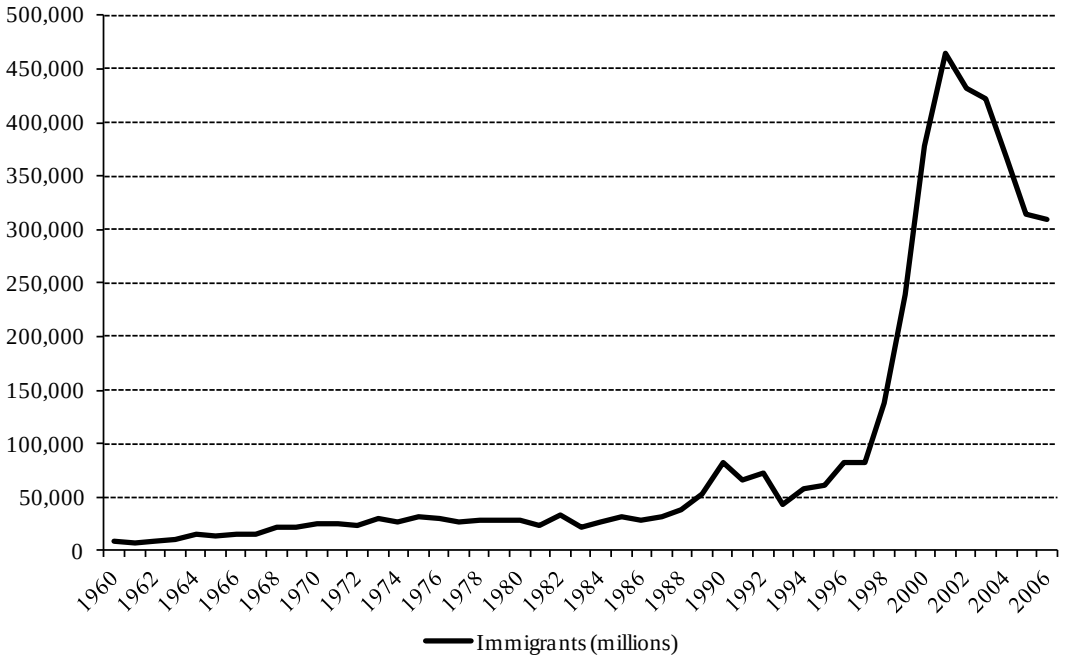
* p<0.1, ** p<0.05, *** p<0.01

APPENDIX

Table A.1 Database elaboration

	Dropped observations	Total
Total sample		**15441**
Missing Age/ not recorded	41	
Missing Year of arrival/ not recorded	212	
Missing Years of residence/ not recorded	1	
Subtotal		15187
Subsample - Data restricted to:		
Year of arrival>1996	5226	
Age between 14 and 65 years	242	
Age at arrival (between 14 and 56 years)	411	
Not finish studies in Spain	595	
Missings	241	
Country before migrarion: country of birth	1095	
Inactives (retired) / Missings	241	
Subtotal		**7377**
Without labour experience in Spain	945	
Final Subsample		**6432**

Graph 1. Evolution of the new immigrants in Spain by year of arrival



Source: ENI (2007)

Table A.2 Definition of independent variables

Female	1 if respondent is a woman; 0 otherwise
Man	1 if respondent is a man; 0 otherwise
Age	Age in years
Age^2	Age square
Years since arrival	Years
Married	1 if the respondent is married; 0 otherwise
Number of children	Number of daughters and sons
Residence authorization	1 if the respondent declares having any of the following documents: Permanent residency authorisation; temporary residency authorisation, EU residence permit (except in the case of Romanian and Bulgarian workers who, despite being EU citizens could not become legally contracted workers in Spain temporarily at the time of the survey); refugee status or assylum application. This cathegory also includes immigrants whose nationailty is Spanish, from other EU member state (excluding Bulgaria and Romania) or from non-EU members of thr Free Trade Association (i.e., Lichtenstein, Iceland, Switzerland and Norway); 0 otherwise
Education level attained (dummies variables)	
Primary level	1 if the respondent has primary level attained or less; 0 otherwise
Secondary level	1 if the respondent has secondary level complete or incomeplete; 0 otherwise
Tertiary level	1 if the respondent has tertiary level complete or incomeplete; 0 otherwise
Language	
Speaks spanish	1 if respondent declares having spanish as her mother tongue or, if she states can speak Spanish 'well' or 'very well'; 0 otherwise
Region of origin	
Western Europe	1 if country of birth is in Western Europe; 0 otherwise
Eastern Europe	1 if country of birth is in Eastern Europe; 0 otherwise
Latin America	1 if country of birth is in Latin America; 0 otherwise
North Africa	1 if country of birth is in North Africa; 0 otherwise
Asia	1 if country of birth is in Asia; 0 otherwise
Rest of the world	1 if country of birth is in Oceania, rest of Africa, ; 0 otherwise

Table A.2 (Cont.)

Migration between municipalities. Frecuency (%)	
1. Never moved	1 if respondent declares have lived in the same municipality since arrival; 0 otherwise
2. Moved once	1 if respondent declares have lived in two different municipalities; 0 otherwise
3. More than one	1 if respondent declares have lived in more than two different municipalities; 0 otherwise
Motives for migration	
Labor	1 if respondent declares moved because being unemployed in the country of origin or declares looking for a better job; 0 otherwise
Family regrouping	1 if respondent declares family regrouping; 0 otherwise
Social networks	
Contacts at arrival (Close ties)	1 if respondent has contacts at arrival; 0 otherwise
Social participation in organizations exclusive for immigrants	1 if respondent participates in: immigrant assistance organizations specifically to foreigners, associations and sports clubs specifically targeting foreigners, educational and cultural groups specifically targeting foreigners, religious organizations and groups specifically targeting foreigners, other groups specifically targeting foreigners; 0 otherwise
Social participation in mixed organizations	1 if respondent participates in: NGO´s Political organizations, unions, or neighborhood activities, Religious groups, Sport clubs, educational and cultural groups, Other social groups; 0 otherwise
Migrant proportion	Proportion of immigrants of the same country of birht living in the same Autonomous Community on the total immigrant population in the Autonomous Community (%)
Network job	1 if respondent has found the job through family and friends; 0 otherwise
Formal job	1 if respondent has found the job through State and private employment agencies, newspapers´ advertisements, union hiring halls as well as school and college placement services; 0 otherwise

Table A.2 (Cont.)

Sector of activity	
Agriculture	1 if respondent' first job is in: Agriculture, Hunting, and Forestry Fishing, Minning; 0 otherwise
Industry	1 if respondent' first job is in: Manufacture industries, Production and distribution of electricity, gas and water; 0 otherwise
Construction	1 if respondent' first job is in Construction; 0 otherwise
Trade	1 if respondent' first job is in: Trade, repair of motor vehicles and motorcycles and personal articles and electronic products for household; 0 otherwise
Hotel sector	1 if respondent' first job is in: Hotel sector; 0 otherwise
Transportation	1 if respondent' first job is in: Transport, storage and communications; 0 otherwise
Firm services	1 if respondent' first job is in: Financial intermediation Real estate, renting and business services; 0 otherwise
Education- Health	1 if respondent' first job is in: Education, Health and veterinary activities, social service, Other social and community services, personal services; 0 otherwise
Household activities	1 if respondent' first job is in: Household activities; 0 otherwise
Public administration	1 if respondent' first job is in: Public administration, defense and compulsory social security; 0 otherwise

Table A.2 (Cont.)

Occupation	
Manager	1 if respondent declares: Management of companies and public administrations; 0 otherwise
Professional	1 if respondent declares: Technical and scientific professionals and intellectuals, Technicians and associate professionals; 0 otherwise
Paraprofessional	1 if respondent declares: Administrative workers, Workers in catering services, personal services, protection services, and comercial salers; 0 otherwise
Skilled workers	1 if respondent declares: Qualified workers in fishing and agriculture activities. Craftsmen and skilled manufacturing, construction, and mining, except plant and machinery operators. 0 otherwise
Unskilled workers	1 if respondent declares: Unskilled occuppation; 0 otherwise

Table A.3 Occupational mobility between actual occupation and last occupation in the country of origin

Region	Last occupation in the origin country	Actual occupation in Spain					
		Manager	Professional	raprofessior	Qualified workers	Unskilled workers	Total
Total sample	Manager	**11.2**	9.1	27.5	16.7	35.5	100
	Professional	1.7	**20.0**	30.5	11.2	36.7	100
	Paraprofessional	0.9	3.5	**38.7**	10.0	46.9	100
	Qualified workers	0.1	1.2	11.4	**39.5**	47.7	100
	Unskilled workers	0.1	1.0	16.8	13.0	**69.1**	100
	Total	1.3	5.9	25.3	19.7	47.8	100
Developed countries of Europe	Manager	**59.5**	10.8	18.9	5.4	5.4	100
	Professional	6.9	**60.3**	25.2	3.1	4.6	100
	Paraprofessional	7.0	17.4	**55.7**	4.4	15.7	100
	Qualified workers	1.3	6.7	17.3	**62.7**	12.0	100
	Unskilled workers	0.0	13.3	23.3	16.7	**46.7**	100
	Total	10.3	28.9	32.0	16.2	12.6	100
Latin America	Manager	**3.4**	9.0	32.8	18.1	36.7	100
	Professional	1.0	**14.8**	36.3	12.0	35.8	100
	Paraprofessional	0.4	2.4	**43.5**	9.3	44.4	100
	Qualified workers	0.0	1.4	12.9	**41.3**	44.4	100
	Unskilled workers	0.3	0.3	23.6	12.5	**63.4**	100
	Total	0.6	5.0	31.5	18.2	44.7	100
Eastern Europe	Manager	**8.1**	8.1	16.2	13.5	54.1	100
	Professional	0.5	**8.4**	20.3	10.9	59.9	100
	Paraprofessional	0.8	1.1	**24.6**	12.2	61.4	100
	Qualified workers	0.2	0.4	9.4	**39.0**	51.2	100
	Unskilled workers	0.0	0.6	9.5	11.8	**78.1**	100
	Total	0.6	2.0	15.4	23.3	58.7	100
North Africa	Manager	**0.0**	5.9	23.5	23.5	47.1	100
	Professional	0.0	**10.8**	24.3	24.3	40.5	100
	Paraprofessional	0.0	5.2	**18.2**	15.6	61.0	100
	Qualified workers	0.0	0.6	7.8	**28.5**	63.1	100
	Unskilled workers	0.0	0.8	5.7	14.5	**79.0**	100
	Total	0.0	2.5	11.1	21.7	64.8	100
Asia	Manager	**0.0**	0.0	0.0	0.0	0.0	100
	Professional	6.3	**18.8**	31.3	12.5	31.3	100
	Paraprofessional	0.0	3.3	**63.3**	10.0	23.3	100
	Qualified workers	0.0	4.0	36.0	**16.0**	44.0	100
	Unskilled workers	0.0	5.9	11.8	5.9	**76.5**	100
	Total	1.1	6.8	39.8	11.4	40.9	100
Rest of the world	Manager	0.0	12.5	12.5	37.5	37.5	100
	Professional	0.0	50.0	0.0	16.7	33.3	100
	Paraprofessional	0.0	7.7	23.1	12.8	56.4	100
	Qualified workers	0.0	0.0	7.1	40.5	52.4	100
	Unskilled workers	0.0	0.0	12.8	18.0	69.2	100
	Total	0.0	8.9	12.3	24.0	54.8	100

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