

# Job Search Strategies in Times of Crisis: Natives and Immigrants in Spain

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December 5, 2016

## Abstract

This paper uses Spanish Labor Force Survey data for the period 2005 to 2010 to analyze the job search methods adopted by unemployed natives and immigrants. We focus on the determinants of these job search methods and examine the interaction between the methods selected and native and immigrant exit rates from unemployment in a period that covers the transition from economic growth to crisis. Our findings suggest that, irrespective of the job search methods adopted, the hazards of leaving unemployment are greater for natives than they are for immigrants. The gap emerges in the second half of 2006, one year before the onset of the international crisis. Prior to this date, no differences were observed in their respective exit rates from unemployment. Finally, we find a mixed correlation between the job search methods and the probability of finding a job.

*JEL Classifications:* J15, J61, J64.

*Keywords:* job search methods, unemployment, employment, immigration.

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<sup>‡</sup>I wish to thank the Editor, three anonymous referees, Pere Arqué-Castells, Per-Anders Edin, Stefan Eriksson and Jordi Jofre-Monseny for useful comments and suggestions. I also acknowledge financial support from the Spanish Ministry of Science (ECO2016-75941R) and the Catalan Government (project N 2014SGR420). Part of this project was conducted while the author was visiting the UCLS at Uppsala University.

# 1 Introduction

In most European countries, immigrants belong to the most vulnerable groups in the labor market, performing worse than their native counterparts. According to Eurostat, the unemployment rate in the European Union 15 (EU-15) in 2010 was 14.8% for immigrants (i.e., those born outside EU-15) and 8.8% for natives. The median annual net income for the same two collectives in 2010 was 13,478 and 18,330 euros, respectively. Most of the academic research on labor migration has focused on the effects of immigrants on native populations and on the assimilation of immigrants. However, the strategies, in terms of the job search activities, that underpin immigrant and native performances in the labor market have received little attention in the empirical labor literature.<sup>1</sup> The articles by Frijters et al. (2005) and Daneshvary et al. (1992) are, however, two notable exceptions, while a number of papers have examined job search activities in the general population or in other defined groups (see, for example, Holzer (1988) for the US, Osberg (1993) for Canada, Addison and Portugal (2002) for Portugal and Bachmann and Baumgarten (2013) for Europe).

Spain's immigration has grown substantially over the last twelve years. Figure 1 shows that its foreign-born population increased from 2.9% of the total population in 1998 (1.2 million) to 14.0% in 2010 (6.6 million) while the foreign-born working age population (WAP) grew from 3.4% of the total WAP (0.9 million) to 17.4% (5.5 million) in the same period. Additionally, since the onset of the global financial and economic crisis, Spain's labor market has been particularly hard hit. Thus, the unemployment rate has risen from 8.3% in 2007 to 20.1% in 2010, but this increase has been particularly high among the immigrant population, where unemployment rate has risen from 12.2% in 2007 to 30.2% in 2010.

In this study, we have used data for Spain between 2005 and 2010 in order to analyze the interaction between job search activities (job search methods used) and the performance of natives and immigrants in the labor market (finding a job and type of job found). We believe that Spain is a particularly appropriate testing ground for conducting this study for the following reasons:

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<sup>1</sup>The choice of job search methods and how much effort unemployed individuals devote to job search activities are crucial in the efficiency of the matching process in the search and matching models (see Pissarides (2000)).

1. The country experienced a massive influx of immigrants in a very short period of time. This inflow of immigrants was the largest among developed countries.<sup>2,3</sup>
2. The international crisis, which started in 2007, has had a severe impact on the Spanish labor market. Above all, the rise in unemployment since 2007 (from 7.8% to 19.3%) has been, by far, the highest among developed countries.<sup>4</sup>
3. Finally, the duality (permanent and fixed-term contracts) that characterizes the country's labor market provides an interesting opportunity to analyze the interaction between job search methods used and their effectiveness in finding more "stable" employment.<sup>5</sup>

Thus, in this article, we document and provide empirical evidence of the job search methods being adopted by unemployed natives and immigrants in the Spanish labor market, and their relative success in finding a job, with a particular emphasis on the effects of the change in the business cycle following the onset of the international economic crisis. More specifically, based on a rotating panel data set, drawn from the Spanish Labor Force Survey (SLFS, *Encuesta de la Población Activa*) for the period 2005:1-2010:2, we analyze for both, unemployed natives and immigrants, the determinants of their adoption of different job search methods and the influences of the methods chosen on the probability of finding a job.

The novelty of the immigration phenomenon in Spain has generated, in recent years, a growing number of studies analyzing the labor market assimilation of immigrants, as well

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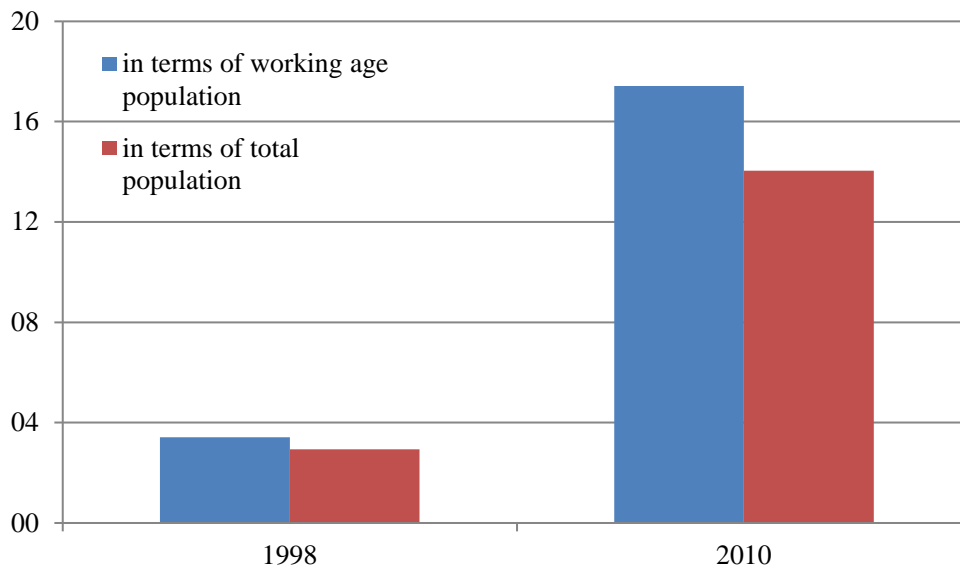
<sup>2</sup>Concretely, during the period 2000-2006, among developed countries, Spain was the second recipient of immigrants in absolute terms (only behind the US) and had the highest level of all in relation to the native population, with an annual average of 540 thousand immigrants (OECD (2007)).

<sup>3</sup>Spain's immigration was predominantly labor immigration attracted by demand factors, like the economic boom between 1995 and 2007 and the small size of native young cohorts. Unlike other European countries, the proportion of asylum seekers in the total inflow of immigrants was just 2.7% in Spain, compared to 79% in Sweden, 58% in France, 46% in Denmark and 38% in the UK (Source: OECD Data-set-International Migration Database).

<sup>4</sup>These figures are relatively high to those recorded by other European countries that are equally exposed to the international crisis. For instance, between 2007 and 2010, the unemployment rate (for workers between 20 and 64 years old) in Greece, Ireland and Portugal rose from 8.3 to 12.7%, from 4.4 to 13.6% and from 8.2 to 11.1%, respectively.

<sup>5</sup>For more details on the duality of the Spanish labor market see, among others, Bentolila et al. (2012) and Silva and Vázquez-Grenno (2013).

Figure 1: **Foreign-born population (in percentage terms)**



Source: Own calculations from the SLFS (INE).

as, the economic effects of immigration flows on the labor market opportunities of native populations.<sup>6</sup> However, the use that natives and immigrants make of job search methods remains unexplored in Spain. We hypothesize that if there are differences in their respective behaviors, then, these differences could help us to explain the unequal labor market outcomes shown by these two collectives of workers.

Our findings reveal a number of differences in the strategies used by unemployed natives and immigrants during their job search process. However, no significant differences are found across the immigrants' regions of origin. We also document that controlling for search methods used, observed and unobserved characteristics, immigrants are less likely to gain employment than natives. In addition, and consistent with some previous empirical evidence for Spain, we find that, regardless of the search method used, before the start of the crisis (until the second half of 2006) there were no differences in the probabilities of natives and immigrants finding employment (i.e., González and Ortega (2011)). In the same line as Carrasco and García-Pérez (2012), we find that natives' advantage appears five or six quarters before the onset of the international crisis (second semester of 2006) and continues until the

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<sup>6</sup>Carrasco et al. (2008) and Amuedo-Dorantes and De la Rica (2011) are two of the first studies that examine the effects of the recent immigration wave on labor market outcomes in Spain.

end of our period of analysis. Although with very low levels of statistical significance, we also find that immigrants are at a disadvantage when it comes to getting permanent jobs.

The empirical evidence available to date on the subject of “search methods/immigration” refers primarily to the US and the UK. In an early study, Daneshvary et al. (1992) analyzed immigrant assimilation in terms of the job search methods adopted by immigrants as their length of residence in the US increased. They report evidence of an assimilation pattern; specifically, they observe that immigrants tend to use the same job search strategies as those employed by natives within twelve years of their arrival in the US. Frijters et al. (2005) provide empirical evidence of the job search methods used by immigrants and their efficiency in obtaining jobs in the UK. Specifically, they find that male immigrants have more trouble finding jobs than white UK born males and that the choice of search method explains “virtually” none of the difference in job-finding probabilities between natives and immigrants. A further branch of this literature explores job search activities by focusing on the behavior of ethnic minorities. Battu, Seaman and Zenou (2011) and Pellizzari (2010) are two examples of this approach conducted in the UK and the European Union, respectively. They analyze whether unemployed individuals that belong to ethnic minorities are more likely to use personal contacts than other “formal” search methods. They also compare the relative efficiency of these unemployed workers in finding jobs. Their findings show that personal networks are the most popular method among ethnic minorities and, ultimately, immigrants have greater trouble than natives in finding work.

This paper has points in common with some previous assimilation studies conducted in Spain, in the sense that we compare the search strategies of natives and immigrants, and the subsequent labor market performances of these two collectives. Among others, Amuedo-Dorantes and De la Rica (2011), Fernández and Ortega-Masagué (2008), Silva and Vázquez-Grenno (2011) and Alcobendas et al. (2012) analyze, by looking at different labor outcomes, the economic assimilation of immigrants in Spain. Amuedo-Dorantes and De la Rica (2011), using the 2001 Population Census and the 2002 Earnings Structure Survey, find evidence of the assimilation of immigrants in terms of employment and occupations, but this assimilation process varies significantly by gender, educational attainment and their origin. Fernández and Ortega-Masagué (2008), using data from the Spanish Labor Force Survey, between 1996 and 2006, find that after five years of residence in Spain the initial gap in participation and

unemployment rates tends to disappear. Silva and Vázquez-Grenno (2011) document an immigrant assimilation process, in terms of job-finding and job separation rates, for those that have lived for more than four years in Spain. Alcobendas et al. (2012) study assimilation patterns by skill level using the SLFS for the period 2000-2008. Contrary to findings from countries with a longer tradition of immigration, they find that having a high-school degree does not give immigrants an advantage in terms occupation or wage assimilation (relative to their native counterparts). Finally, our analysis has points in common with Carrasco and García-Pérez (2012), who study the labor market responses of natives and immigrants to the economic crisis. Using administrative data drawn from the Spanish Social Security, they find that immigrant workers are more sensitive than natives to the changes in the economic conditions in 2008, both in terms of unemployment and employment hazards. Concretely, during periods of economic growth immigrant unemployment exit rates are higher than native rates and, in times of bad economic conditions the job separation rates are also higher for immigrants.

This paper seeks to contribute to the literature by: i) documenting and providing empirical evidence of the interaction between job search activities and the job finding probabilities of natives and immigrants in an economy in transition from a boom to a recession that has had severe effects on the labor market; ii) studying the differences in the job search methods/strategies adopted by these two groups. Then, our paper is closely related to Frijters et al. (2005), in the sense that we also document and provide empirical evidence on the determinants of the job search methods used by natives and immigrants, and their respective efficiency in their transitions from unemployment to the employment status; and to Battu et al. (2011), as we draw on similar data.

The remainder of the paper is organized as follows. In section two we introduce the database and the characteristics of our sample. In the third section we present a descriptive analysis, while in section four we outline our empirical methodology. The econometric results are presented in section five and section six concludes.

## 2 Data and sample characteristics

Our analysis draws on data from the SLFS which is conducted every quarter with a sample of some 65,000 households (about 180,000 individuals). Since the second quarter of 1987, the SLFS has operated as a rotating panel in which each household is surveyed for a maximum of six consecutive quarters. Each quarter a new cohort of households is selected, and one sixth of existing households leave the sample. The SLFS is designed to be representative of the total Spanish population, and its main goal is to reveal the characteristics of that population with regard to the labor market. Labor force transitions can be studied by monitoring consecutive information for the same individuals. These data have been available since 1987:2. Here, we consider twenty-two consecutive waves of the SLFS. The first wave corresponds to that of the first quarter of 2005 while the last corresponds to that of the second quarter of 2010.<sup>7</sup> Specifically, we consider all individuals of working age (20 to 64) that reported being unemployed<sup>8</sup> for at least one period during their inclusion in the SLFS sample and observed more than one period. We exclude those individuals who were receiving any type of pension and those self-perceived as disabled. Further, we select individuals from the following regions: Latin America, Asia, Africa, and Europe non EU-15.<sup>9</sup> Natives comprise the majority of the sample, 67,049 individuals (90.8%), observed on average for a total of 4.7 periods. The remaining 9.2% of the sample are individuals without Spanish or other European Union 15 nationality (6,752), present on average for 4.0 periods.<sup>10,11,12</sup>

Our data concerning job search methods are derived from responses to the following

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<sup>7</sup>We have had to restrict our period of analysis because the database (flow statistics in the SLFS) only provides information by nationality since 2005.

<sup>8</sup>All individuals looking for job opportunities as an employee, in self-employment or both in the four weeks prior to interview.

<sup>9</sup>We also exclude individuals from North America (except Mexico) and Oceania. Those originally from these continents represented just 0.75% of the foreign-born population in 2010.

<sup>10</sup>We define immigrants by their nationality. The SLFS (flows database) does not provide information about place of birth.

<sup>11</sup>If this difference in the average number of periods reflects the fact that immigrants are more likely than Spaniards to change residence in order to take up a job (see Amuedo-Dorantes and De la Rica (2010)), then we are underestimating the job finding rates.

<sup>12</sup>In the SLFS flows database attrition makes impossible to match all individual workers across quarters. The unconditional non-responses vary from 7 to 17% in the first and sixth waves respectively (see Jiménez-Martín and Peracchi (2002)).

questions in the SLFS: Are you registered at the public employment office?; Are you registered at a private employment office?; Have you contacted entrepreneurs?; Have you asked your family, friends or unions about a job?; Have you posted or answered an advertisement?; Have you taken an exam or an interview?; Have you looked into becoming self-employed?; Have you looked for funding to become self-employed?; Are you awaiting the results of a job application/s?; Are you preparing exams to become a civil servant?; Are you waiting for a call from the public employment office?; Have you looked at job advertisements in newspapers, on TV, radio, etc.? Following Battu et al. (2011), we then aggregated these job search methods in six groups: public employment office, private employment office, news (answering adverts, placing adverts and looking for media adverts), personal networks (family friends and unions), direct (contact entrepreneurs, looked into permits required/financing available for becoming self-employed) and others.

### 3 Descriptive analysis

Table 1 shows the percentage adoption of the distinct job search methods by the different groups in our sample. The most common job search method among all unemployed workers is that of personal networks (72.6%), followed by direct methods (62.3%) while the least frequently employed method is, by some distance, the private agency (25.6%). The level of education attained by the unemployed workers seems to have an influence on the choice of job search method. Individuals with a university degree are more likely to use search methods that include seeking opportunities in the media (news), looking for information to set-up their own business (direct), registering at private agencies and other methods, while they are less likely to register at a public employment office and turn to personal networks. By contrast, unemployed individuals with lower levels of education make more use of public job offices and personal networks than the rest of the unemployed. We observe an inverted U-shaped pattern in the use of most methods with increasing duration of unemployment. As the length of unemployment increases, the use of search methods also rises, but when an unemployed worker becomes a long-term unemployed, we notice a fall-off in the use of job search methods. One explanation for this behavior could be that the recently unemployed find jobs more easily and so require less search effort, whereas, at the other extreme, the lower



search effort recorded by the long-term unemployed could be a result of growing feelings of discouragement.

A comparison of the methods used by natives and immigrants shows that the latter are more likely to use personal networks in seeking a job (80.6% vs. 71.8%) and less likely to be registered in the public employment office (60.9% vs. 48.0%). An examination of the job search strategies adopted by immigrants from different regions of origin does not reveal any marked differences. However, unemployed individuals from Africa tend to make greater use of personal networks, direct and private agencies; those from Latin-American countries prefer to use private agencies, news and direct methods. Those from the European non EU-15 countries use public employment offices, and private agencies, less than other immigrants.

Unemployed individuals with no previous experience use most of the search methods less frequently than those with experience (except news). We also observe differences in job search strategies by gender, age and years of residence. Men show a preferential use of direct methods and personal networks; the young unemployed prefer news and direct search methods and are less likely to use a public employment office; we also observe that immigrants with more than three years of residence in Spain tend to increase their use of formal job search methods (agencies, news and direct). Finally, the last column of the Table 1 reports the average number of job search methods used by unemployed workers classified according to their individual characteristics.

Table 2 presents, for natives and immigrants, the percentage of use made of each job search method in each year and the average number of methods used by year for the whole period. For both natives and immigrants, we observe a U-shaped pattern with a decline in the use of all search methods until the end of the period of expansion (2007) with a trend break in 2008 coinciding with the start of the economic crisis in Spain. The same pattern is observed for the average number of search methods used. In other words, a response of the unemployed individuals is detected in terms of the use of the different job search methods to the sudden and huge increase in unemployment from the beginning of 2008. This result probably reflects both a change in the composition of unemployed individuals as well as a change in the job search strategies of those unemployed for some time. In particular, the increment in the use of the public employment office by immigrants (from 39.9% in 2005 to 59.2% in 2010) is surprising. This rise in the use of the public employment office by immigrants

Table 1: Use of different job search methods of unemployed workers

	Percentage of unemployed workers						Average Number Methods
	public agency	private agency	news	personal networks	direct	other	
All	59.73	25.56	50.21	72.57	62.29	55.89	4.63
Primary school	62.15	18.91	35.49	75.77	54.93	50.97	4.12
Secondary school	60.08	25.37	50.44	73.63	62.93	55.80	4.67
University degree	56.68	31.95	62.75	67.09	67.24	60.51	4.99
Short-term unemployed	56.49	25.16	47.91	68.61	61.84	53.83	4.45
Medium-term unemployed	61.38	26.83	53.73	75.65	66.23	57.86	4.87
Long-term unemployed	63.49	24.76	50.15	75.97	58.50	57.24	4.68
No job experience	49.60	24.27	51.12	69.90	60.34	52.98	4.37
Men	60.51	24.34	49.92	74.93	66.67	55.77	4.77
Women	59.09	26.55	50.44	70.65	58.71	56.00	4.52
Young	54.02	28.57	56.75	70.98	68.62	56.49	4.79
Old	62.67	24.00	46.83	73.40	59.02	55.59	4.51
Natives							
All	60.91	25.20	49.88	71.76	62.15	56.70	4.64
No job experience	52.11	24.33	51.30	67.93	61.12	55.53	4.44
Immigrants							
All	48.02	29.04	53.46	80.62	63.68	47.85	4.56
No job experience	28.57	23.81	49.59	86.37	53.86	31.53	3.79
Years of residence							
3 and less than 3 years	41.07	25.95	52.37	80.96	61.83	45.03	4.32
More than 3 years	51.54	30.61	54.02	80.46	64.61	49.29	4.68
Regions							
Non EU-15	45.14	25.81	52.55	80.61	62.67	46.30	4.47
Latin America	48.59	30.43	56.30	80.12	63.88	50.06	4.66
Africa	49.52	29.97	48.81	81.99	64.50	44.95	4.44
Asia	51.72	27.09	51.23	78.33	62.56	47.78	4.64

Note: Short-term unemployed refers to those unemployed for less than three months; Medium-term unemployed to those unemployed for between three and twelve months; Long-term unemployed to those unemployed for one year or more.

Source: Own elaboration using Spanish Labor Force Survey (INE).

might be explained by the increase in the percentage of unemployed immigrants receiving unemployment benefit (UB). In other words, while in 2005 many unemployed immigrants had been working in informal sectors or had been in Spain for a very short time (i.e., they were ineligible for UB), in 2010 immigrants that had been working in formal sectors, and who were therefore eligible for UB, became unemployed.

Table 2: Use of different job search methods by unemployed workers

	Percentage of unemployed workers						Average Number Methods
	public agency	private agency	news	personal networks	direct	other	
Natives							
2005	61.48	27.71	45.83	69.50	59.73	64.30	4.61
2006	57.07	24.95	46.30	67.09	57.16	57.99	4.37
2007	56.78	22.00	42.47	62.72	54.87	53.60	4.17
2008	59.12	23.87	47.92	70.09	60.97	54.29	4.74
2009	65.54	25.99	57.10	78.93	68.47	55.46	5.06
2010	62.95	25.92	58.99	80.97	70.71	52.43	4.50
Immigrants							
2005	39.91	30.28	48.45	77.80	58.54	49.69	4.20
2006	38.18	26.93	47.41	73.83	54.36	42.60	3.93
2007	37.65	25.39	44.71	72.55	55.20	44.02	3.91
2008	46.61	29.99	51.96	80.38	64.47	46.15	4.71
2009	56.64	29.98	60.25	86.52	71.11	51.90	5.10
2010	59.16	30.73	60.92	85.85	67.79	49.60	4.63

Source: Own elaboration using Spanish Labor Force Survey (INE).

## 4 Empirical methodology

We begin by analyzing the factors that lead an unemployed individual to use a specific job search method. As described in section 2, we aggregated the job search methods in six groups.<sup>13</sup> Then, our dependent variable is a binary variable that takes the value 1 if the individual reports using the job search method and 0 otherwise.

<sup>13</sup>In the estimations we consider the following five groups of job search methods: public employment agency, private employment agency, personal networks, news and direct search methods.

$sm_{i,j} = 1$  if individual  $i$  reports using job search method  $j$ ,  $sm_{i,j} = 0$  if individual  $i$  does not report using job search method  $j$ .

Then, we estimate the following logit model:

$$Pr[sm_{i,j} = 1/X_i] = \frac{\exp(\beta_j X_i)}{1 + \exp(\beta_j X_i)}, \quad (1)$$

where  $i$  indexes individuals and  $j$  the different job search methods and  $X_i$  is a set of control variables. Specifically, we estimate the determinants of each one of the five job search methods using two econometric specifications. First, we estimate the determinants of each job search method group including a dummy for the individual's nationality and a set of control variables that include age, age squared, years of residence, previous sector in which individual was employed (where applicable) and unemployment duration and dummy variables for gender, marital status, level of education, UB and previous experience. We have also included the unemployment rate at a regional level for each quarter in our period.<sup>14,15</sup> All these personal characteristics are included to remove the composition of the groups (natives and immigrants) and other potentially confounding factors from our estimations. For instance: i) if the group of workers with an education level less than high school is becoming more native with the onset of the crisis, controlling by education level could remove the part of the effect due purely to the composition of the groups; ii) if sectors in which immigrants find employment are more sensitive to business cycle fluctuations than other sectors, controlling by the previous sector of employment could control for this potential source of heterogeneity. Regional unemployment is included in order to remove the variation that is purely driven by the cross-regional differences. Second, we use the same set of control variables but disaggregate the nationality dummy into four separate dummies to identify immigrants from other European (non EU-15) countries, Asia, Africa and Latin America.<sup>16</sup> In both specifications we include dummy variables for the year in which the survey was conducted to capture time-varying effects such as the business cycle.<sup>17</sup> Because of the Spanish labor market crisis, we

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<sup>14</sup>For each unemployed worker these personal characteristics correspond to the first unemployment spell that we observe.

<sup>15</sup>UB was excluded from the estimation of the public employment agency determinants. To receive the UB a person has to be registered at a public employment office so, in order to avoid endogeneity, we decided to exclude these variables.

<sup>16</sup>Disaggregation of nationalities provided by the SLFS.

<sup>17</sup>For instance, skill composition changes over the business cycle, with relatively high skilled people becom-

are also concerned about immigrants returning to their countries of origin. If this process is qualitatively relevant, it could affect our sample and, ultimately, bias our estimates. In relation to this possible source of selection bias, we check the magnitude of this return migration using three different statistics, and we do not find any evidence that it constitutes a major issue in our period of analysis (until, that is, the second semester of 2010).<sup>18,19</sup>

As previously mentioned, in our data we can only observe exits from unemployment on a quarterly basis. This type of data fits discrete-time survival models well. In this second step, following Wooldridge (2001), Bover et al. (2002) and Jenkins (2005), and using our sample from the SLFS, we build an unbalanced rotating panel data-set to estimate a discrete time duration model. The data allow us to construct a panel of individuals which are observed over a maximum of  $C$  discrete time periods after becoming unemployed ( $2 \leq C \leq 6$ ). We observe  $T$  if  $T < C$ , otherwise we only observe the event that  $T \geq C$ . In our panel, we consider that  $T$  is independent of  $C$  (is a rotating panel). We also assume proportional transition rates for individual  $i$ , causing proportional shifts of a so-called baseline transition rate for the transition from unemployment to employment. Concretely, we model the discrete transition probabilities using a complementary log-log specification that allows us to model the hazard of unemployees' exit rates. Then, we estimate the probability of transition from unemployment to employment before the individuals leave the SLFS as:

$$\lambda_i(t) = \text{Prob}[T = t \mid T \geq t, X_i^1], \quad (2)$$

where  $\lambda_i(t)$  represents the hazard rate at  $t$  and  $X_i^1$  is a vector of individual, sectoral and  


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ing unemployed at the beginning of the crisis.

<sup>18</sup>The Municipal Register shows that overall the number of immigrants in the working age population increased across our period of analysis, and it fell, for the first time, in 2012. We also examined the statistics of those excluded from the register because they did not re-register. In 2006 the government initiated a re-registration control, forcing those immigrants from countries outside the EU-27 to re-register in their municipality every two years. Between 2007 and 2010 the number of individuals that were excluded from the Register increased by 20 thousand (from 140,000 to 160,000) and in the following two years it fell again so that by 2012 there were 130,000 exclusions. Finally, at the end of 2008, the Spanish government implemented a voluntary return migration program addressed to unemployed immigrant workers. The program has not been very successful; in fact, during the period 2009-2012, only 10,299 individuals joined the program.

<sup>19</sup>For a detailed analysis of the migration outflows observed in recent years in Spain see Izquierdo et al. (2015).

aggregate characteristics. In addition to the set of control variables described above ( $X_i$  in equation 1)  $X_i^1$  also includes a variable that indicates the log for the number of further waves of data the respondent was expected to be present in. We also estimate other specifications that contain multiplicative variables interacting the search methods with an individual's nationality.

Positive coefficient estimates suggest that larger values of the explanatory variables increase the hazard of leaving unemployment. A negative coefficient estimate suggests that the variable is negatively associated with the hazard.

Finally, to capture the business cycle behavior, and in particular the effects of the international crisis, we examine how these hazards of leaving unemployment evolve over time, depending on the nationality of the unemployed individuals, and the job search method used.

## 5 Econometric Results

### 5.1 Determinants of the search methods

Table 3 shows the results for the specification that analyzes the determinants of each of the five job search methods, focusing on any distinctions between natives and immigrants.

We find a number of differences in their respective preferred job search methods. Specifically, accounting for individual characteristics, we find that unemployed Spanish nationals are more likely to use public and private employment offices, direct methods and news than are their immigrant counterparts. However, native unemployed workers tend to use personal networks less than immigrants. When we examine immigrant heterogeneity in terms of region of origin (bottom panel of Table 3) we find that unemployed foreign workers, from all regions, are less likely to use public employment offices and direct methods and more likely to use personal networks. Finally, we do not find any statistical differences between natives and Latin American immigrants in terms of the use of news or between natives and African immigrants in terms of the use of private employment agencies.

The above results might be interpreted as follows: i) given that immigrants are more likely to be employed in sectors with high levels of informality (i.e., domestic service and restaurants) employment offices (public and private) are less useful methods for finding a work in those sectors; ii) in addition, the compulsory requirement to be registered at a

Table 3: Estimates of logistic determinants of the job search methods (marginal effects)

	Determinants of the job search method (single dummy)				
	public agency	private agency	personal networks	news	direct
Immigrant	-0.277*** (0.021)	-0.052*** (0.020)	0.129*** (0.023)	-0.048** (0.024)	-0.166*** (0.023)
Age	0.013*** (0.002)	0.000 (0.001)	0.006*** (0.002)	0.002 (0.002)	-0.003* (0.002)
Age squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000** (0.000)
Unemployment benefit		0.032*** (0.004)	0.039*** (0.004)	0.057*** (0.004)	0.057*** (0.004)
Secondary education	-0.001 (0.005)	0.038*** (0.005)	-0.015*** (0.005)	0.100*** (0.005)	0.039*** (0.005)
University education	-0.031*** (0.006)	0.079*** (0.005)	-0.065*** (0.005)	0.201*** (0.006)	0.081*** (0.006)
Men	0.036*** (0.003)	-0.024*** (0.003)	0.029*** (0.003)	-0.007* (0.004)	0.059*** (0.004)
Married	0.011*** (0.004)	-0.025*** (0.004)	-0.033*** (0.004)	-0.060*** (0.004)	-0.044*** (0.004)
Years of residence	0.008*** (0.001)	0.003*** (0.001)	-0.002* (0.001)	-0.001 (0.001)	0.001 (0.001)
Unemployment duration	-0.001*** (0.000)	0.000 (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000 (0.000)
Regional unemployment	-0.000 (0.000)	-0.011*** (0.000)	0.004*** (0.000)	-0.012*** (0.000)	0.007*** (0.000)
Elegibility for UB		0.010** (0.005)	-0.042*** (0.005)	-0.025*** (0.005)	-0.009* (0.005)
Europe non EU15	-0.289*** (0.022)	-0.080*** (0.022)	0.131*** (0.025)	-0.067*** (0.026)	-0.173*** (0.025)
Asia	-0.260*** (0.037)	-0.071** (0.036)	0.091** (0.041)	-0.090** (0.041)	-0.200*** (0.041)
Africa	-0.284*** (0.024)	-0.032 (0.023)	0.148*** (0.027)	-0.075*** (0.027)	-0.163*** (0.026)
Latin America	-0.269*** (0.022)	-0.039* (0.021)	0.124*** (0.024)	-0.027 (0.024)	-0.161*** (0.024)
Observations	73,801	73,801	73,801	73,801	73,801

Notes: These specifications include year dummies and sector of previous employment. Significant at the 0.10 (\*); 0.05 (\*\*); and 0.01 levels (\*\*\*). Reference categories: natives, Year 2005, female, primary education, single and unemployed not receiving unemployment benefit. Robust standard errors are in parentheses.

public employment office in order to receive UB may also explain that immigrants use this job search method much less; iii) finally, the marked differences in the frequency of use of personal networks between all groups of immigrants and natives provide evidence of the importance within immigrant communities of helping fellow countrymen to integrate in the country of destination.

The estimated parameters for the control variables present the expected signs. Unemployed individuals receiving UB, and forming part of the SLFS sample, report making greater use of all the job search methods than those that do not receive any benefit. This result might reflect the monitoring of the job search activities of the unemployed that benefit from the unemployment insurance system. We also find that job seekers with a university degree, or those who have at least completed their secondary education, make more use of private employment offices, news and direct methods, and less use of personal networks and public employment office than unemployed workers that have only completed primary education. These results are in line with previous studies that have shown that personal networks are especially relevant for poorly educated job seekers (i.e. Corcoran et al. (1980) and Boheim and Taylor (2002)) and that news and direct methods are more common among highly educated individuals (i.e. Boheim and Taylor (2002)) . As the period of unemployment increases, individuals are more likely to use family networks and news and to rely less on the public employment office. This result is consistent with the notion of the low efficiency of the public employment agency for helping individuals find work, in the sense that the unemployed use the public agency while they are receiving UB (given that it is a compulsory requirement) but once the benefit is exhausted individuals desist from using the public agency as a search method. Men are more likely than women to use personal networks and direct methods and less likely to use public and private employment offices and news. Unemployed individuals that are married make less use of all the methods than those that are single with the exception of the public employment office.

We find some evidence in favor of assimilation; specifically, immigrants tend to use public and private agencies more and personal networks less as the period of time they have spent in Spain increases. Finally, unemployed individuals who reside in regions with high unemployment tend to use personal networks and direct methods more, while the other three methods are more common among individuals resident in regions with low levels of unemployment.



Most of these results are consistent with outcomes reported in Frijters et al. (2005) and Battu et al. (2011); in particular, the finding that the use of personal networks is the most important search mechanism among immigrant communities and the poorly educated unemployed.

## 5.2 Employment

This section examines the correlates of the job search methods on the hazard of leaving unemployment controlling by individual characteristics and, in section 5.2.3, we also control for unobserved heterogeneity. We focus the analysis on the relationship between the job search methods, the job seeker's country of origin and the hazard of leaving unemployment. More specifically, we estimate how the probability of finding any type of job and the probability of finding a permanent job differ between natives and immigrants.

### 5.2.1 Total employment

Table 4 presents the results for finding any type of job before leaving the SLFS. We show three different specifications including a dummy (or dummies) for immigrant status. The main difference between these specifications is that in the second (model two) we add interactions between the immigrant dummy and the different job search methods and in the third model (column three) we disaggregate the immigrant dummy into four separate dummies for immigrants from European non EU-15 countries, Asia, Africa and Latin America, keeping the interactions between job search methods and regions of origin. The complete results with the estimated control parameters are deferred to the Annex (see Table A.1).

Our results indicate that unemployed immigrants are less likely to exit from unemployment than are job seekers with Spanish nationality (models one and two) and that this disadvantage is clear for all groups of immigrants (model three). This general result is also in line with previous findings for the UK (see Frijters et al. (2005) and Battu et al. (2011)) that show a clear penalty for non-whites with respect to whites in finding jobs. An interpretation for this result is the following: during the period of economic growth (the early years in our study period - 2005 to 2007) the number of jobs increased by almost two million and fifty percent of these positions were occupied by immigrants, mostly on a fixed-term basis and concentrated primarily in the construction sector and domestic services.<sup>20</sup> Later, the con-

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<sup>20</sup>González and Ortega (2011) show that the large inflows of immigrants covered most of the low-skill

struction sector was the sector most severely affected by the economic crisis and, therefore, immigrant workers, clearly over-represented in this sector, have been seriously affected by the crisis. Thus, the disadvantage faced by immigrant communities in finding jobs is reflected in the worsening labor market performance of immigrants compared to those of native workers throughout our period of study.

We observe that unemployed workers who, at the very least, report being registered at a public employment office, using personal networks and news as search methods, are less likely to find jobs. However, those who report the use of, at least, private agencies and direct approaches seems to no influence the job finding. When we interact the job search methods with the immigrant dummy, we find that news (which on its own has a negative effect) has a strong positive effect on the hazard of leaving unemployment, completely offsetting the original negative effect. In other words, unemployed immigrants who report using news as a search method are more successful in finding jobs than those who do not report the use of this method. In the case of personal networks, although not statistically significant, we find that those immigrants who report using this method would have lower unemployment exit rates than those who report not using it (magnifying the original effect). These results are consistent with Battu et al. (2011) who report that there is a penalty in exit from unemployment when individuals use personal networks as a job search method.

The estimated parameters of the control variables (presented in Table A.1) are, in general, statistically significant and present the expected signs. For instance, time in unemployment reduces the hazard of leaving unemployment and unemployed individuals with secondary and university education find jobs more easily than those who have only completed primary education. Previous experience in the Finance, Industry, Construction and Commerce sectors makes the transition from unemployment to employment more difficult, while the contrary is the case for those unemployed with experience in the agricultural sector. We also find that the hazard of leaving unemployment is higher for men than it is for women and for married than it is for single individuals. The number of years' residence in Spain does not seem to have any relation with on the probability of finding work.

When we allow for immigrant heterogeneity in terms of region of origin (model three Table 4), we estimate that the disadvantage is important for immigrants from all regions.

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vacancies in these sectors.

Table 4: Estimates of hazards of leaving unemployment

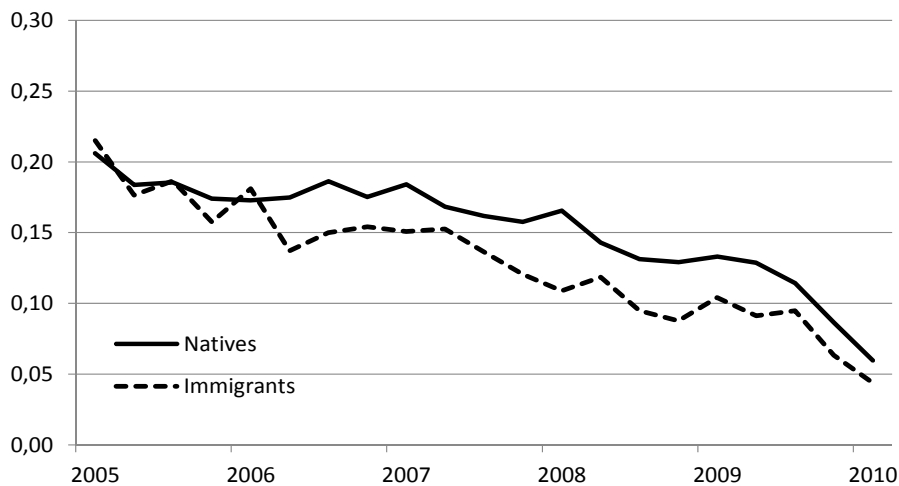
	Model one		Model two		Model three
Immigrant	-0.363*** (0.071)	Immigrant	-0.435*** (0.080)	European non EU-15	-0.529*** (0.108)
				Asia	-0.958*** (0.292)
				Africa	-0.553*** (0.118)
				Latin America	-0.307*** (0.090)
Public agency	-0.206*** (0.014)	Public agency	-0.208*** (0.015)	Public agency	-0.207*** (0.015)
Private agency	-0.009 (0.014)	Private agency	-0.014 (0.014)	Private agency	-0.014 (0.014)
Per. Networks	-0.259*** (0.014)	Per. Networks	-0.254*** (0.014)	Per. Networks	-0.254*** (0.014)
News	-0.142*** (0.013)	News	-0.157*** (0.014)	News	-0.157*** (0.014)
Direct	0.005 (0.013)	Direct	0.004 (0.014)	Direct	0.004 (0.014)
		Pub.ag.*imm.	-0.005 (0.042)		
		Pr.ag.*imm.	0.049 (0.047)		
		P.net.*imm.	-0.044 (0.049)		
		News.*imm.	0.156*** (0.043)		
		Direct.*imm.	0.015 (0.044)		
Observations	196,131		196,131		196,131

Notes: Significant at the 0.10 (\*); 0.05 (\*\*); and 0.01 levels (\*\*\*). These specifications include all the control variables used in Table 3. In addition, these specifications include an indicator for the remaining number of waves of data the respondent was expected to be present in. The higher number of observations compared to Table 3 is due to the fact that we construct a panel from the previous sample of unemployed using the expected duration in the SLFS.

Examining the interactions (Table A.1), we find a positive effect for those immigrants from Latin America, Europe non EU-15 and Africa who report using news as a job search method. So, the positive influences of the interactions between immigrant status and news that we found in the model two seem to be a generalized effect, offsetting the original negative effect. For the rest of the interactions between nationalities and search methods there is no clear patterns.

As mentioned in section 1, one of the objectives of this paper is to analyze the effects of the economic crisis on the search strategies and labor market performance of natives and immigrants in Spain. From a broader perspective, we wish to provide evidence of the relationship between the hazards of unemployment and the business cycle. We seek a response to the following questions: i) How does the employment crisis influence native and immigrant probabilities of finding a job? and ii) How has the effectiveness of the different job search methods changed since the onset of the economic crisis? To address these questions, first, Figure 2 shows the evolution in the predicted hazards of leaving unemployment for natives and immigrants and, second, Figure 3 presents the evolution in the predicted hazards of leaving unemployment depending on the job search method adopted.<sup>21</sup>

Figure 2: **Predicted hazards of leaving unemployment by nationality**



Note: These are the predictions from the model one in Table 4 including dummies for year-quarter interaction. The rest of variables were hold at their mean.

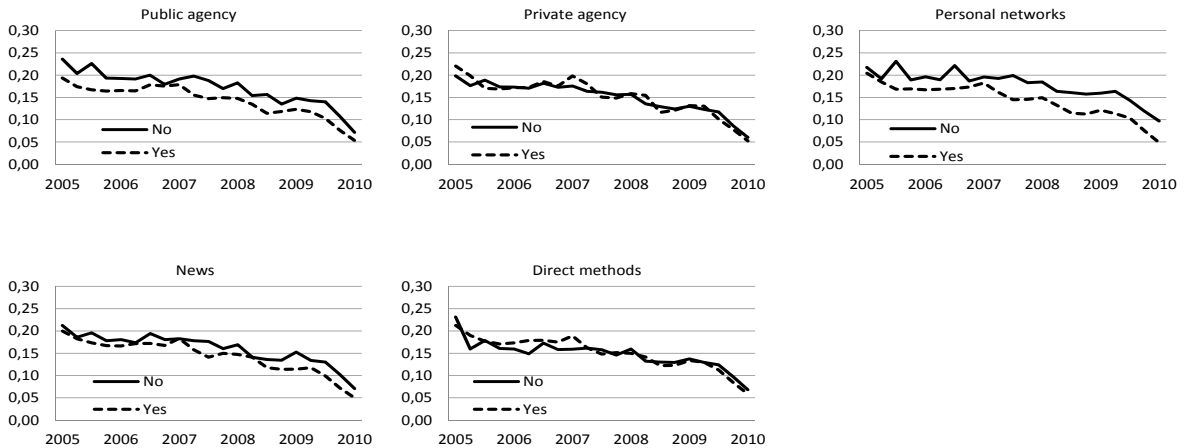
In general we observe a marked decline in the job finding probabilities of both, natives

<sup>21</sup>In Figures 2 and 3 we plot the predicted hazards, holding the rest of the variables at their sample mean. So, the differences that we observe, in both graphs, can be attributed to the immigrant dummy.

and immigrants, with the onset of the international crisis in mid-2007 (see Figure 2). In addition, higher probabilities are observed for natives since the beginning of 2006 and this gap broadens with the onset of the international economic downturn. As such, this result provides empirical support for claims that the international crisis, initiated in the middle of 2007, has affected immigrants more severely than it has natives.

Figure 3 shows that the effectiveness of all search methods has fallen since 2007; in particular, the disadvantage of using personal networks to find a work widened since the beginning of the international crisis. This is consistent with the previous findings that highlight that this method is much more frequent among those collectives which present the worst performances in the labor market. For the other job search methods, the differences are not statistically significant.

Figure 3: **Predicted hazards of leaving unemployment & use of search methods by nationality**



Note: These are the predictions from the model one in Table 4 including dummies for year-quarter interaction. The rest of variables were hold at their mean.

### 5.2.2 Permanent employment

We are also interested in determining whether nationality and the choice of job search methods might influence the job quality (type of employment contract) that job seekers find. Given the duality (permanent and fixed-term jobs) that characterizes the country's labor market

<sup>22</sup>, we aim to shed some light on this issue by analyzing the interaction between job search methods, nationality and the probability of transition from unemployment to permanent employment.

The results of these estimations are presented in Table 5. When accounting for job search methods and observable individual characteristics (models one and two) we estimate a disadvantage for immigrants in terms of their unemployment exit rates to a permanent job but not statistically significant. The same result is observed when we allow for heterogeneity among immigrants, we find that the disadvantage is not statistically significant for unemployed workers originally from all regions.

The importance of job search methods in relation to the hazard of leaving unemployment to take up a permanent job differs somewhat from the probability of finding any type of job. We also find that immigrants (especially those from Latin American and African countries) who report using news as a job search method are more likely to find permanent employment and, by contrast, unemployed immigrants, in particular those from Latin America, who, at the very least, report using a public employment office are less successful in finding permanent jobs. We also find (although falling just with short of statistical significance) that immigrants from Africa that at very least use personal networks are less likely to exit from unemployment to permanent employment while the contrary is the case for those immigrants using private agencies. Finally, the estimated parameters of all control variables are presented in Table A.2 in the Annex. We find statistically significant estimates that are similar to those discussed in section 5.2.1 above.

### 5.2.3 Unobserved heterogeneity

In this section we re-estimate the duration models already estimated in previous sections (5.2.1 and 5.2.2) but allowing for unobserved heterogeneity. Due to unobserved factors, such as ability, motivation, effort, differences in family income, social pressure, etc., there might be some individuals who are more or less likely to leave unemployment. Then, unobserved heterogeneity is likely to bias our estimation of interest.

In order to control for unobserved heterogeneity, we have used a method that considers an

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<sup>22</sup>According to the SLFS, in our period of analysis, the average share of temporary contracts, among wage earners, is 30.1% .

Table 5: Estimates of hazards of leaving unemployment to a permanent job

	Model one		Model two		Model three
Immigrant	-0.077 (0.170)	Immigrant	-0.254 (0.190)	European non EU-15	-0.286 (0.249)
				Asia	-1.400 (0.853)
				Africa	-0.361 (0.274)
				Latin America	-0.198 (0.210)
Public agency	-0.345*** (0.040)	Public agency	-0.316*** (0.042)	Public agency	-0.315*** (0.042)
Private agency	-0.121*** (0.038)	Private agency	-0.141*** (0.041)	Private agency	-0.141*** (0.041)
Per. Networks	-0.473*** (0.036)	Per. Networks	-0.471*** (0.038)	Per. Networks	-0.472*** (0.038)
News	-0.114*** (0.036)	News	-0.152*** (0.038)	News	-0.152*** (0.038)
Direct	-0.156*** (0.035)	Direct	-0.152*** (0.037)	Direct	-0.152*** (0.037)
		Pub.ag.*imm.	-0.312*** (0.110)		
		Pr.ag.*imm.	0.209* (0.120)		
		P.net.*imm.	-0.001 (0.120)		
		News.*imm.	0.343*** (0.111)		
		Direct.*imm.	-0.014 (0.110)		
Observations	196,131		196,131		196,131

Notes: Significant at the 0.10 (\*); 0.05 (\*\*); and 0.01 levels (\*\*\*). These specifications include all the control variables used in Table 3. In addition, these specifications include an indicator for the remaining number of waves of data the respondent was expected to be present in. The higher number of observations compared to Table 3 is due to the fact that we construct a panel from the previous sample of unemployed using the expected duration in the SLFS.

individual random effect  $u$  independent from the covariates  $X$ . According to Jenkins (2005) this individual unobserved component can be integrated out from the survivor function once a functional form for  $u$  is specified. Then, in our estimates, unobserved heterogeneity is modeled as an unobservable random effect  $u$  that is normally distributed.<sup>23</sup>

Table 6 shows the estimated results of the same specifications as the first columns in Tables 4 and 5 but controlling for unobserved heterogeneity (the full results and the other specifications of Tables 4 and 5 are deferred to the Annex to Tables A.3 and A.4). The likelihood ratio test suggests statistically significant unobserved heterogeneity in both specifications. As in section 5.2.1, for the hazard rates from unemployment to any type of employment (column one in Table 6), we estimate a statistically significant disadvantage for immigrants, although larger than in the previous estimates. The baseline estimate for our parameter of interest was -0.36 and, controlling for unobserved heterogeneity, is -1.15. This sizable difference in the magnitude of our parameter of interest indicates that, controlling for unobserved individual characteristics (e.g. ability, motivation, social pressure, etc.) is relevant for our analysis. The rest of estimated parameters show the same sign as in the baseline model (column one in Tables 4). The estimated hazard rates from unemployment to a permanent employment (column two in Table 6) goes in the same line as the baseline model (column one in Table 5). We estimate a not statistically significant disadvantage for immigrants in terms of their unemployment exit rates to a permanent job. However, when we include interactions between nationality and job search method, we estimate a statistically significant disadvantage for immigrants, in particular for those who declare to use the public employment agency (column 2 in Table A.4). Finally, when we consider heterogeneity of immigrants, we find a statistically significant disadvantage for unemployed workers originally from Asia and Africa.

## 6 Final Remarks

In this paper, we have empirically analyzed whether native and immigrant job search strategies differ and how this choice of strategies correlates with their hazard rates of leaving unemployment, using individual data from SLFS for the period 2005-2010. First, we have

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<sup>23</sup>We use the `xtcloglog` command in STATA to estimate these models. The program reports the likelihood ratio test for the null hypothesis that the variance of the individual effects is zero. Unobserved heterogeneity is not important if this hypothesis cannot be rejected.



Table 6: Estimates of hazards of leaving unemployment with unobserved heterogeneity

	One	Two
Immigrant	-1.152*** (0.241)	-0.368 (0.373)
Public agency	-0.735*** (0.051)	-0.698*** (0.083)
Private agency	-0.019 (0.044)	-0.232*** (0.078)
Per. Networks	-0.992*** (0.054)	-1.044*** (0.081)
News	-0.555*** (0.045)	-0.209*** (0.074)
Direct	0.071 (0.044)	-0.327*** (0.074)
$\chi^2$	4710	137.9
$\sigma_u$	4.380	3.691
$\rho$	0.921	0.892
Observations	196,131	196,131

Notes: Significant at the 0.10 (\*); 0.05 (\*\*); and 0.01 levels (\*\*\*). These specifications include all the control variables used in Table 3. In addition, these specifications include an indicator for the remaining number of waves of data the respondent was expected to be present in. The higher number of observations compared to Table 3 is due to the fact that we construct a panel from the previous sample of unemployed using the expected duration in the SLFS.

focused our analysis on the determinants of the job search methods adopted. Second, using duration data constructed from a rotating panel sample, we have estimated discrete hazard models in order to analyze the hazards of leaving unemployment and, in particular, to determine how the search strategies interact with the job finding probabilities before and after the economic crisis.

The main findings can be summarized as follows:

1. Immigrants tend to use personal networks more, and to use employment agencies (public and private) and direct search methods less, than natives. Moreover, individual characteristics (i.e. education, gender, civil status, unemployment duration) play an important role in determining the use of the different job search methods.
2. After controlling for observed and unobserved characteristics unemployed immigrants tend to exit from unemployment less easily than natives. The influence of the economic crisis on the labor market has been a generalized feature; however, the importance have not been uniform across collectives. We also find that the differences between native and immigrant exit rates have grown since the onset of the economic crisis (from the second half of 2007).
3. The use of personal networks, the public employment office, and news are methods that negatively correlate with the hazards of leaving unemployment. The adoption, at the very least, of direct methods increases the probability to find a job.
4. When we allow for interactions between nationality and job search methods, immigrants present a number of specific outcomes. Thus, those immigrants that report using news as a search method find themselves at an advantage when leaving unemployment. Moreover, this result remains valid for immigrants from all regions. We find the opposite result for those immigrants who, at the very least, report using personal networks as a search method. Finally, direct methods seem to be particularly useful in helping Asian immigrants find jobs.
5. When it comes to finding a permanent job, although with very low levels of statistical significance, we find that immigrants are at a disadvantage when it comes to getting permanent jobs. In the case of interactions between job search methods and the nationality of the unemployed, we find that those immigrants who report using, at least, news

or a private agency as search methods have an advantage in terms of the hazards of leaving unemployment, while the opposite is the case for immigrants who report using the public agency.

Our findings regarding the effectiveness of public employment offices are disquieting. In particular, our results indicate a negative selection of unemployed workers (male, old and low-skilled) by this public agency but, after controlling for individual characteristics, leaving unemployment is much more difficult for those unemployed workers who declare using public offices as a search method. From the perspective of policy makers, improving the effectiveness of the public employment office, by promoting active labor market policies so as to counterbalance the difficulties of finding employment and the hardships of the international economic crisis, represents something of a challenge.

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# Annex

Table A.1: **Estimates of hazards of leaving unemployment**

	Model one		Model two		Model three
Immigrant	-0.363*** (0.071)	Immigrant	-0.435*** (0.080)	European non EU-15	-0.529*** (0.108)
				Asia	-0.958*** (0.292)
				Africa	-0.553*** (0.118)
				Latin America	-0.307*** (0.090)
Public agency	-0.206*** (0.014)	Public agency	-0.208*** (0.015)	Public agency	-0.207*** (0.015)
Private agency	-0.009 (0.014)	Private agency	-0.014 (0.014)	Private agency	-0.014 (0.014)
Per. Networks	-0.259*** (0.014)	Per. Networks	-0.254*** (0.014)	Per. Networks	-0.254*** (0.014)
News	-0.142*** (0.013)	News	-0.157*** (0.014)	News	-0.157*** (0.014)
Direct	0.005 (0.013)	Direct	0.004 (0.014)	Direct	0.004 (0.014)
Years res.	-0.005 (0.004)	Years res.	-0.006 (0.004)	Years res.	-0.003 (0.004)
Imm*Age	0.009** (0.004)	Imm*Age	0.009** (0.004)	Imm*Age	0.012** (0.005)
Age	-0.044*** (0.004)	Age	-0.043*** (0.004)	Age	-0.046*** (0.005)
Age sq.	0.000*** (0.000)	Age sq.	0.000*** (0.000)	Age sq.	0.000*** (0.000)
Secondary	0.092*** (0.016)	Secondary	0.092*** (0.016)	Secondary	0.090*** (0.016)
University	0.262*** (0.019)	University	0.263*** (0.019)	University	0.262*** (0.019)
Male	0.100*** (0.012)	Male	0.100*** (0.012)	Male	0.102*** (0.012)
Married	0.069*** (0.014)	Married	0.068*** (0.014)	Married	0.069*** (0.014)
Reg. Unemp.	-0.014*** (0.001)	Reg. Unemp.	-0.014*** (0.001)	Reg. Unemp.	-0.014*** (0.001)
Un. Benef.	0.124*** (0.014)	Un. Benef.	0.124*** (0.014)	Un. Benef.	0.123*** (0.014)
No Experience	-0.489*** (0.023)	No Experience	-0.488*** (0.023)	No Experience	-0.488*** (0.023)
Time unemp.	-0.048*** (0.001)	Time unemp.	-0.048*** (0.001)	Time unemp.	-0.048*** (0.001)
Construction	-0.157*** (0.030)	Construction	-0.156*** (0.030)	Construction	-0.156*** (0.030)
Industry	-0.197*** (0.038)	Industry	-0.199*** (0.038)	Industry	-0.197*** (0.038)
Agricultural	0.110*** (0.042)	Agricultural	0.122*** (0.042)	Agricultural	0.132*** (0.042)

Table A.1 – Continued

Finance	-0.257*** (0.047)	Finance	-0.261*** (0.047)	Finance	-0.266*** (0.047)
Com.&Serv.	-0.106*** (0.027)	Com.&Serv.	-0.111*** (0.027)	Com.&Serv.	-0.111*** (0.027)
log(duration)	0.924*** (0.011)	log(duration)	0.924*** (0.011)	log(duration)	0.926*** (0.011)
		Pub.ag.*imm.	-0.005 (0.042)	Pub.ag.*Eu-n-EU15	0.082 (0.083)
		Pr.ag.*imm.	0.049 (0.047)	Pr.ag.*Eu-n-EU15	0.014 (0.095)
		P.net.*imm.	-0.044 (0.049)	P.net.*Eu-n-EU15	-0.010 (0.096)
		News.*imm.	0.156*** (0.043)	News.*Eu-n-EU15	0.146* (0.081)
		Direct.*imm.	0.015 (0.044)	Direct.*Eu-n-EU15	0.026 (0.085)
				Pub.ag.*Asia	0.222 (0.225)
				Pr.ag.*Asia	-0.483* (0.258)
				P.net.*Asia	0.446 (0.293)
				News.*Asia	0.111 (0.239)
				Direct.*Asia	0.408 (0.260)
				Pub.ag.*Af.	0.168* (0.088)
				Pr.ag.*Af.	0.086 (0.096)
				P.net.*Af.	-0.203** (0.102)
				News.*Af.	0.174** (0.088)
				Direct.*Af.	0.001 (0.090)
				Pub.ag.*L.Am.	-0.139** (0.057)
				Pr.ag.*L.Am.	0.064 (0.063)
				P.net.*L.Am.	-0.007 (0.067)
				News.*L.Am.	0.129** (0.060)
				Direct.*L.Am.	0.010 (0.060)
Observations	196,131		196,131		196,131

Notes: Significant at the 0.10 (\*); 0.05 (\*\*); and 0.01 levels (\*\*\*). These specifications include all the control variables used in Table 4. Robust standard errors are in parentheses.



Table A.2: Estimates of hazards of leaving unemployment to a permanent job

	Model one		Model two		Model three
Immigrant	-0.077 (0.170)	Immigrant	-0.254 (0.190)	European non EU-15	-0.286 (0.249)
				Asia	-1.400 (0.853)
				Africa	-0.361 (0.274)
				Latin America	-0.198 (0.210)
Public agency	-0.345*** (0.040)	Public agency	-0.316*** (0.042)	Public agency	-0.315*** (0.042)
Private agency	-0.121*** (0.038)	Private agency	-0.141*** (0.041)	Private agency	-0.141*** (0.041)
Per. Networks	-0.473*** (0.036)	Per. Networks	-0.471*** (0.038)	Per. Networks	-0.472*** (0.038)
News	-0.114*** (0.036)	News	-0.152*** (0.038)	News	-0.152*** (0.038)
Direct	-0.156*** (0.035)	Direct	-0.152*** (0.037)	Direct	-0.152*** (0.037)
Years res.	-0.007 (0.010)	Years res.	-0.005 (0.010)	Years res.	-0.000 (0.011)
Imm.*Age	0.007 (0.011)	Imm.*Age	0.011 (0.011)	Imm.*Age	0.015 (0.011)
Age	-0.123*** (0.011)	Age	-0.125*** (0.011)	Age	-0.129*** (0.012)
Age sq.	0.002*** (0.000)	Age sq.	0.002*** (0.000)	Age sq.	0.002*** (0.000)
Secondary	0.157*** (0.043)	Secondary	0.158*** (0.043)	Secondary	0.154*** (0.043)
University	0.249*** (0.051)	University	0.254*** (0.051)	University	0.252*** (0.051)
Male	-0.106*** (0.032)	Male	-0.107*** (0.032)	Male	-0.104*** (0.032)
Married	0.240*** (0.037)	Married	0.239*** (0.037)	Married	0.240*** (0.037)
Reg. Unemp.	-0.076*** (0.004)	Reg. Unemp.	-0.077*** (0.004)	Reg. Unemp.	-0.077*** (0.004)
Un. Benef.	0.323*** (0.040)	Un. Benef.	0.317*** (0.040)	Un. Benef.	0.315*** (0.040)
No experience	-0.531*** (0.065)	No experience	-0.531*** (0.065)	No experience	-0.529*** (0.065)
Time unemp.	-0.039*** (0.002)	Time unemp.	-0.038*** (0.002)	Time unemp.	-0.039*** (0.002)
Construction	-0.611*** (0.095)	Construction	-0.589*** (0.095)	Construction	-0.590*** (0.095)
Industry	-0.475*** (0.106)	Industry	-0.462*** (0.106)	Industry	-0.464*** (0.106)
Agricultural	-0.709*** (0.155)	Agricultural	-0.680*** (0.156)	Agricultural	-0.677*** (0.156)
Finance	-0.303** (0.120)	Finance	-0.305** (0.120)	Finance	-0.312*** (0.121)
Com.&Serv.	-0.074	Com.&Serv.	-0.071	Com.&Serv.	-0.071

Table A.2 – Continued

	(0.066)		(0.067)		(0.067)
log(duration)	0.007	log(duration)	0.011	log(duration)	0.015
	(0.011)		(0.011)		(0.011)
		Pub.ag.*imm.	-0.312***	Pub.ag.*Eu-n-EU15	-0.254
			(0.110)		(0.219)
		Pr.ag.*imm.	0.209*	Pr.ag.*Eu-n-EU15	0.352
			(0.120)		(0.246)
		P.net.*imm.	-0.001	P.net.*Eu-n-EU15	0.282
			(0.120)		(0.230)
		News.*imm.	0.343***	News.*Eu-n-EU15	0.115
			(0.111)		(0.206)
		Direct.*imm.	-0.014	Direct.*Eu-n-EU15	-0.320
			(0.110)		(0.207)
				Pub.ag.*Asia	0.559
					(0.668)
				Pr.ag.*Asia	0.086
					(0.705)
				P.net.*Asia	0.625
					(0.835)
				News.*Asia	-0.356
					(0.686)
				Direct.*Asia	0.516
					(0.766)
				Pub.ag.*Af.	-0.321
					(0.244)
				Pr.ag.*Af.	0.234
					(0.260)
				P.net.*Af.	-0.471*
					(0.257)
				News.*Af.	0.424*
					(0.240)
				Direct.*Af.	0.334
					(0.248)
				Pub.ag.*L.Am.	-0.389***
					(0.144)
				Pr.ag.*L.Am.	0.149
					(0.156)
				P.net.*L.Am.	0.013
					(0.161)
				News.*L.Am.	0.443***
					(0.152)
				Direct.*L.Am.	-0.012
					(0.146)
Observations	196,131		196,131		196,131

Notes: Significant at the 0.10 (\*); 0.05 (\*\*); and 0.01 levels (\*\*\*). These specifications include all the control variables used in Table 5. Robust standard errors are in parentheses.

Table A.3: Estimates of hazards of leaving unemployment with unobserved heterogeneity

	Model one		Model two		Model three
Immigrant	-1.152*** (0.241)	Immigrant	-1.854*** (0.380)	European non EU-15	-2.041*** (0.520)
				Asia	-3.661*** (1.197)
				Africa	-2.322*** (0.564)
				Latin America	-1.540*** (0.430)
Public agency	-0.735*** (0.051)	Public agency	-0.929*** (0.071)	Public agency	-0.932*** (0.072)
Private agency	-0.019 (0.044)	Private agency	-0.052 (0.067)	Private agency	-0.052 (0.067)
Per. Networks	-0.992*** (0.054)	Per. Networks	-1.260*** (0.073)	Per. Networks	-1.265*** (0.073)
News	-0.555*** (0.045)	News	-0.790*** (0.065)	News	-0.790*** (0.065)
Direct	0.071 (0.044)	Direct	0.095 (0.066)	Direct	0.095 (0.066)
Years res.	-0.016 (0.013)	Years res.	-0.022 (0.018)	Years res.	-0.009 (0.019)
Imm*Age	0.030** (0.014)	Imm*Age	0.038* (0.020)	Imm*Age	0.050** (0.021)
Age	-0.135*** (0.014)	Age	-0.151*** (0.020)	Age	-0.164*** (0.021)
Age sq.	0.001*** (0.000)	Age sq.	0.001*** (0.000)	Age sq.	0.001*** (0.000)
Secondary	0.312*** (0.051)	Secondary	0.394*** (0.072)	Secondary	0.386*** (0.073)
University	0.826*** (0.065)	University	1.047*** (0.089)	University	1.046*** (0.090)
Male	0.326*** (0.039)	Male	0.420*** (0.055)	Male	0.430*** (0.055)
Married	0.194*** (0.043)	Married	0.228*** (0.062)	Married	0.232*** (0.062)
Reg. Unemp.	-0.060*** (0.004)	Reg. Unemp.	-0.087*** (0.006)	Reg. Unemp.	-0.087*** (0.006)
Un. Benef.	0.307*** (0.047)	Un. Benef.	0.375*** (0.066)	Un. Benef.	0.376*** (0.067)
No experience	-1.578*** (0.082)	No experience	-1.987*** (0.107)	No experience	-1.992*** (0.108)
Time unemp.	-0.160*** (0.005)	Time unemp.	-0.209*** (0.005)	Time unemp.	-0.210*** (0.005)
Construction	-0.474*** (0.099)	Construction	-0.545*** (0.139)	Construction	-0.545*** (0.140)
Industry	-0.554*** (0.127)	Industry	-0.675*** (0.178)	Industry	-0.668*** (0.179)
Agricultural	0.397*** (0.151)	Agricultural	0.631*** (0.202)	Agricultural	0.682*** (0.202)
Finance	-0.707***	Finance	-0.882***	Finance	-0.889***

Table A.3 – Continued

	(0.151)		(0.214)		(0.215)
Com.&Serv.	-0.298***	Com.&Serv.	-0.334***	Com.&Serv.	-0.334***
	(0.089)		(0.126)		(0.126)
log(duration)	5.989***	log(duration)	7.791***	log(duration)	7.824***
	(0.160)		(0.138)		(0.136)
		Pub.ag.*imm.	-0.125	Pub.ag.*Eu-n-EU15	0.158
			(0.194)		(0.371)
		Pr.ag.*imm.	0.251	Pr.ag.*Eu-n-EU15	0.043
			(0.212)		(0.426)
		P.net.*imm.	-0.039	P.net.*Eu-n-EU15	-0.083
			(0.245)		(0.481)
		News.*imm.	0.629***	News*Eu-n-EU15	0.697*
			(0.198)		(0.381)
		Direct.*imm.	0.013	Direct*Eu-n-EU15	0.080
			(0.206)		(0.392)
				Pub.ag.*Asia	0.692
					(1.062)
				Pr.ag.*Asia	-1.873
					(1.197)
				P.net.*Asia	1.757
					(1.292)
				News*Asia	0.509
					(1.097)
				Direct*Asia	1.166
					(1.179)
				Pub.ag.*Africa	0.541
					(0.398)
				Pr.ag.*Africa	0.375
					(0.422)
				P.net.*Africa	-0.822
					(0.526)
				News*Africa	0.905**
					(0.400)
				Direct*Africa	-0.032
					(0.420)
				Pub.ag.*L.Am.	-0.607**
					(0.269)
				Pr.ag.*L.Am.	0.384
					(0.294)
				P.net.*L.Am.	0.298
					(0.334)
				News*L.Am.	0.357
					(0.277)
				Direct*L.Am.	-0.040
					(0.288)
$\chi^2$	4710		4768		4749
$\sigma_u$	4.380		5.657		5.677
$\rho$	0.921		0.951		0.951
Observations	196,131		196,131		196,131

Notes: Significant at the 0.10 (\*); 0.05 (\*\*); and 0.01 levels (\*\*\*). These specifications include all the control variables used in Table 4. Robust standard errors are in parentheses.

Table A.4: Estimates of hazards of leaving unemployment to a permanent job with unobserved heterogeneity

	Model one		Model two		Model three
Immigrant	-0.368 (0.373)	Immigrant	-0.758* (0.412)	European non EU-15	-0.701 (0.544)
				Asia	-2.962* (1.596)
				Africa	-1.048* (0.599)
				Latin America	-0.715 (0.459)
Public agency	-0.698*** (0.083)	Public agency	-0.633*** (0.085)	Public agency	-0.631*** (0.085)
Private agency	-0.232*** (0.078)	Private agency	-0.265*** (0.082)	Private agency	-0.265*** (0.082)
Per. Networks	-1.044*** (0.081)	Per. Networks	-1.038*** (0.084)	Per. Networks	-1.037*** (0.084)
News	-0.209*** (0.074)	News	-0.282*** (0.078)	News	-0.282*** (0.078)
Direct	-0.327*** (0.074)	Direct	-0.311*** (0.078)	Direct	-0.310*** (0.078)
Years res.	-0.006 (0.021)	Years res.	-0.002 (0.021)	Years res.	0.006 (0.022)
Imm*Age	0.027 (0.023)	Imm*Age	0.035 (0.023)	Imm*Age	0.043* (0.024)
Age	-0.315*** (0.024)	Age	-0.316*** (0.024)	Age	-0.324*** (0.025)
Age sq.	0.004*** (0.000)	Age sq.	0.004*** (0.000)	Age sq.	0.004*** (0.000)
Secondary	0.281*** (0.089)	Secondary	0.280*** (0.088)	Secondary	0.273*** (0.088)
University	0.458*** (0.106)	University	0.464*** (0.105)	University	0.460*** (0.105)
Male	-0.282*** (0.066)	Male	-0.281*** (0.065)	Male	-0.275*** (0.065)
Married	0.515*** (0.075)	Married	0.508*** (0.074)	Married	0.511*** (0.074)
Reg. Unemp.	-0.148*** (0.008)	Reg. Unemp.	-0.147*** (0.008)	Reg. Unemp.	-0.147*** (0.008)
Un. Benef.	0.623*** (0.082)	Un. Benef.	0.605*** (0.082)	Un. Benef.	0.603*** (0.082)
No experience	-1.120*** (0.132)	No experience	-1.118*** (0.131)	No experience	-1.114*** (0.131)
Time unemp.	-0.079*** (0.004)	Time unemp.	-0.078*** (0.004)	Time unemp.	-0.078*** (0.004)
Construction	-1.224*** (0.184)	Construction	-1.172*** (0.183)	Construction	-1.179*** (0.183)
Industry	-0.953*** (0.220)	Industry	-0.927*** (0.218)	Industry	-0.924*** (0.218)
Agricultural	-1.516*** (0.297)	Agricultural	-1.441*** (0.295)	Agricultural	-1.435*** (0.296)
Finance	-0.700*** (0.254)	Finance	-0.700*** (0.251)	Finance	-0.711*** (0.251)

Table A.4 – Continued

Com.&Serv.	-0.120 (0.140)	Com.&Serv.	-0.110 (0.139)	Com.&Serv.	-0.104 (0.139)
log(duration)	2.612*** (0.055)	log(duration)	2.593*** (0.054)	log(duration)	2.542*** (0.089)
		Pub.ag.*imm.	-0.638*** (0.230)	Pub.ag.*Eu-n-EU15	-0.466 (0.441)
		Pr.ag.*imm.	0.406 (0.251)	Pr.ag.*Eu-n-EU15	0.643 (0.500)
		P.net.*imm.	0.061 (0.263)	P.net.*Eu-n-EU15	0.558 (0.500)
		News.*imm.	0.718*** (0.234)	News.*Eu-n-EU15	0.133 (0.431)
		Direct.*imm.	-0.073 (0.234)	Direct.*Eu-n-EU15	-0.653 (0.435)
				Pub.ag.*Asia	0.967 (1.311)
				Pr.ag.*Asia	-0.381 (1.426)
				P.net.*Asia	1.127 (1.673)
				News.*Asia	-0.556 (1.306)
				Direct.*Asia	1.399 (1.518)
				Pub.ag.*Af.	-0.669 (0.499)
				Pr.ag.*Af.	0.531 (0.531)
				P.net.*Af.	-0.884 (0.562)
				News.*Af.	1.068** (0.497)
				Direct.*Af.	0.557 (0.516)
				Pub.ag.*L.Am.	-0.800*** (0.307)
				Pr.ag.*L.Am.	0.293 (0.336)
				P.net.*L.Am.	0.108 (0.359)
				News.*L.Am.	0.916*** (0.326)
				Direct.*L.Am.	-0.059 (0.316)
$\chi^2$	137.9		136.3		134.8
$\sigma_u$	3.691		3.656		3.652
$\rho$	0.892		0.890		0.890
Observations	196,131		196,131		196,131

Notes: Significant at the 0.10 (\*); 0.05 (\*\*); and 0.01 levels (\*\*\*). These specifications include all the control variables used in Table 5. Robust standard errors are in parentheses.