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Une évaluation pour les migrants
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Résumé

Un meilleur emploi grâce aux réseaux de relations pour les immigrés ? Une évaluation pour les migrants arrivés mineurs en France métropolitaine

Il est plus difficile pour les immigrés que pour les natifs de trouver un emploi dans leur pays d'accueil. Nombre d'entre eux sont alors contraints d'accepter, au moins temporairement, un emploi en dessous de leur niveau de qualification, ce qui engendre à la fois une perte en capital humain pour la société et peut porter atteinte à la cohésion sociale. Trouver un emploi par le biais de relations pourrait leur permettre de contourner les obstacles qui les empêchent d'accéder à un poste correspondant à leur niveau de qualification. Nous nous intéressons dans cette étude aux immigrés arrivés en France avant l'âge de 18 ans, ces derniers ayant effectué au moins en partie leurs études initiales en France. Nous utilisons les données de l'enquête Française *Trajectoires et Origines* effectuée en 2009 par l'Ined-Insee pour étudier l'impact de l'utilisation des relations sociales sur la qualité de l'emploi occupé. Afin de corriger le biais potentiel d'endogénéité entre la variable dépendante (occuper un emploi approprié ou non) et la variable d'intérêt (avoir trouvé son emploi grâce à une relation ou non), nous utilisons comme instrument la variable « avoir des frères et sœurs en France » : cette variable influence directement la probabilité d'avoir trouvé un emploi grâce à une relation, mais pas la qualité de cet emploi. Nos résultats indiquent que, pour ces immigrés arrivés mineurs en France, trouver un emploi grâce à une relation améliore significativement la qualité de l'emploi occupé : cela augmente la probabilité d'être dans un emploi correspondant à son niveau de qualification de plus de 0,40 points, pour les femmes et les hommes.

Mots-clés : Déclassement ; Méthode d'accès à l'emploi ; Réseaux de relations ; Immigrés.

Classification JEL : J15; D83; J24.

Abstract

A better job thanks to personal networks? An evaluation for migrants who arrived in metropolitan France before Age 18

It is more difficult for migrants than natives to find a job in their host country, so many of them have to accept, at least temporarily, a job that is below their level of qualification. This represents a waste of human capital for society and can undermine social cohesion. Relying on social relationships might help them to bypass some of the obstacles that prevent them from finding a job that matches their skillset. We focus on migrants who arrived in France before the age of 18 years, who were educated entirely or partially in France. We use the rich French *Trajectories and Origins* dataset for 2009 to study the impact of personal contacts on the quality of the current employment. We measure the job quality using an indicator based on the educational requirement for a given occupation. To address the endogeneity between our dependent variable (holding a suitable job or not) and the variable of interest (employment found through a personal contact or not), we use the variable “sibling(s) in France” as an instrument: this variable influences an individual's probability of finding a job through networks but does not influence directly the quality of the employment. Our results indicate that for these migrants, finding a job through personal contacts strongly and positively impacts the occupational status attained: it raises both women's and men's probability of holding a suitable job by more than 0.40 points.

Keywords: Over-education, Job-finding method, Social networks, Migrants.

JEL Classification: J15; D83; J24.

1. Introduction

In France, as in many OECD countries, it is more difficult for migrants than for natives to find a job (Brinbaum et al. [2015]). They face many obstacles ranging from a lack of knowledge of how the French labor market works to the potentially discriminatory attitudes of recruiters. For want of anything better, workers with foreign origins thus often have to accept jobs for which they are overqualified, at least temporarily (Damas de Matos and Liebig [2014]). This situation is prejudicial to individuals but also to the economy, as it represents a waste of human resources and can undermine social cohesion.

Relying on social relationships might help migrants to bypass some of these obstacles and find a suitable job. Indeed, some empirical studies have found a positive impact of networking on job quality for workers with foreign origins. Using German data, Kanas et al. [2012] show that social contacts lead to a higher occupational status for migrants. Munshi [2003] finds that the larger networks of Mexican migrants in the US lead to higher paying jobs. Mechanisms which improve the quality of information on applicants may explain this positive correlation. A current employee of a firm can recommend a job applicant (Simon & Warner [1992]) or provide additional information to the employer about his or her qualifications, so that the employer will focus on their skills rather than on non-productive characteristics such as origin or place of residence. Contacts might also provide information to job seekers on employers, helping them to concentrate on vacancies where they have a realistic chance of being hired, and offer guidance to help them adopt the appropriate attitude with potential employers.

However, some other empirical studies find that job contact networks do not have a positive impact for migrants. Using Australian data for newly arrived migrants, Mahuteau and Junankar [2008] reached a mitigated conclusion. They showed that only migrants with high human capital succeed in using their contacts to find good jobs, whereas others only find menial jobs. Kalfa and Piracha [2015] obtain the same results, again from Australian data. Battu et al. [2011] observe for the UK that using social networks results, on average, in lower level jobs for ethnic minorities, and for certain ethnic groups in particular. This negative correlation might be explained by the fact that social ties are formed not only to find jobs but for many other reasons,¹ so that contacts often provide information that does not fit job seekers' skills. Using job information received through contacts thus often corresponds to last resort behavior for job seekers, and therefore generates more negative mismatches than formal methods such as direct applications or responding to job adverts (Bentolila et al. [2010], Loury [2006]). However, this negative correlation seems to depend on the nature of the link between the candidate and the referee: a current employee of a firm able to appreciate the quality of a job seeker may prove more useful than a personal contact simply transmitting information but not recommending the individual to the prospective employer² (Antoninis [2006]). More specifically, for workers with foreign origins and particularly for those

¹ See the first note in Bentolila et al. [2010], or Green et al. [1999].

² This may be because contacts have no interest in recommending unsuitable or unreliable workers (Smith [2010]), or simply because they do not work in the firm and do not know the employer (Elliott [2001]; Green et al. [1999]).

displaying high homophily with other individuals of the same origin,³ the correlation also depends on the labor market success of their own community (Battu et al. [2011], Andersson et al. [2009], Yamauchi and Tanabe [2008]).

To our knowledge, there is no empirical research on this issue for France,⁴ even though migrants represent a large share of the working-age population (approximately 10%, see INSEE [2012]). Better understanding their labor market integration is a major social issue.

In this paper, we use the French Trajectories and Origins (2009) dataset restricted to migrants who have spent at least part of their childhood in France. We evaluate the influence of finding a job through contacts on the probability of “holding a suitable job” (vs. “being over-educated”) for migrants who arrived in France before age 18. There are two main reasons for restricting our study to this age group. First, it allows us to focus on people who have all been educated, at least partly, in France and whose educational attainment is therefore easier to measure (Aleksynska & Tritah [2013]). Second, these migrants have had more time and opportunity than those who arrived as adults to form relationships in the host country outside their origin group, so that the quality of their social networks in terms of information about job offers does not just depend on the employment success of other migrants in their group.

Just considering the correlation between “holding a suitable job” and “finding a job through contacts” might lead to spurious evidence, however.⁵ The problem is that unobserved characteristics in term of employability might influence both job quality and the frequency of use of each job search method (responding to a job ad, making a speculative application, using personal contacts, etc.). As mentioned by Bentolila et al. [2010], social contacts generate fewer appropriate job offers, on average, than formal channels which require more search efforts. Contacts will thus probably be used more often as a last resort by those with the worst unobserved characteristics in terms of employability and contact quality. So the observed correlation will not just reflect the influence of using social contacts on job quality but also the influence of unobserved characteristics on both job quality and use of social contacts.

To bypass this problem of unobserved characteristics, we propose an instrumental variable approach which allows us to exogenously separate workers according to their probability of finding a job through contacts, but which has nothing to do with their personality traits or their situation on the labor market. Controlling for the sibling size, and because we consider

³ This is often the case of newly arrived migrants.

⁴ While it does not focus on migrants and considers many OECD countries, Pelizzari [2010] is, to our knowledge, the only paper that addresses the issue of finding a job through contacts and job quality for France. Measuring the quality of jobs through the wage loss/premium associated with job-finding methods and using the European Community Household Panel (ECHP) and the National Longitudinal Survey of Youth (NLSY) for the USA, he finds a negative correlation between finding a job through contacts and job quality for some OECD countries (Finland, Greece, Italy, Portugal and the UK), a positive correlation for Austria, Belgium, the Netherlands, and no significant correlation for Denmark, France, Germany, Ireland, Luxembourg, Spain and the USA. He suggests that these disparities between countries are due mainly to differences in the efficacy of public employment agencies, which are in competition with job contact networks (these are the two least costly methods as they require very little search effort). Thus, if public employment agencies are efficient and frequently provide suitable job offers, only good offers received through contacts will be used.

⁵ The issue of endogeneity when empirically analyzing the role of social networks in economics is developed in Manski (1993, 2000).

migrants arrived before age 18, we assume that the dummy variable “having sibling(s) living in France” vs. “no siblings in France” is such an instrument. We find that getting a job through personal contacts raises both women’s and men’s probability of holding a suitable job by more than 0.40 points.

The paper is organized as follows. We present the dataset in the second section. We discuss the “holding a suitable job” (vs. “being over-educated”) indicator in the third section. The empirical strategy is presented in the fourth section. Finally, we discuss the results and conclude in section five.

2. The dataset

The dataset of the French INED-INSEE *Trajectories and Origins* (2008) survey (TeO hereafter) used in this paper covers 21,761 individuals aged 17-60 years living in metropolitan France (Corsica excluded) who were interviewed in 2007.

The TeO dataset provides detailed information on workers’ job-seeking methods, wages, occupational status and educational level.⁶ TeO is also the only recent French survey in which immigrants and second-generation immigrants are over-represented. This is interesting first and foremost because we can obtain samples of reasonable sizes for many different origins. It is important to control for the origin of workers as the two endogenous variables we are interested in are very sensitive to this factor (for job quality, see for instance OECD [2007], Chiswick & Miller [2009, 2008] or Lindley [2009]; for finding a job through contacts see, for instance, Domingues Dos Santos [2005] for France or Frijters et al. [2005] for the UK). This allows us to avoid some of the biases resulting from unobserved heterogeneity. The samples for each subgroup are not large enough, however, to carry out separate estimations for each one.

The TeO dataset provides a large set of individual characteristics, so that we can control for socio-demographic characteristics (country of origin, age, gender, household/family situation, level of education, command of French, education completed in France or abroad, years spent in France, nationality), family background (parents’ socioeconomic status, number of sibling(s), sibling(s)’s place of residence) and some contextual variables (rural/urban residence, size of locality of residence, residence in a sensitive area).

Because we focus on the probability of finding a job through personal contacts, we only consider current wage employees, excluding business owners and self-employed workers (TeO does not provide any information on their job seeking method). Our sample is also restricted to workers with at least an intermediate vocational qualification, i.e. the lowest educational level above those with a primary or lower-secondary level (who cannot be overeducated, see Table 1). Our final sample is composed of 1,165 individuals (554 women, 611 men).

⁶ As in most surveys, a weighting coefficient calculated from the French annual census can be attributed to each individual.

3. Holding a job that matches educational attainment vs. being over-educated

Since the seminal work of Ducan & Hoffman [1981], three main approaches to measuring over-education have been distinguished in the literature (McGoldrick & Robst, [1996]; OECD report, [2007]).

First, the "normative" approach consists in using a predefined correspondence between each type of job and each educational level. Standard national occupational classifications are often used to establish these correspondences (McGoldrick & Robst [1996]). Second, some authors use a subjective approach which considers self-reported feelings of underemployment (Sloane et al. [1999]). The third method is the "statistical" approach (McGoldrick & Robst [1996]; Kiker et al. [1997]; Verdugo & Verdugo [1989]), which considers the statistical correspondence between each occupation and the observed educational level. This approach is more suitable for our framework because we are interested in comparing the relative performance of individuals in the labor market at a given time.

Many "statistical approaches" are used. One of the oldest ones was designed by Verdugo & Verdugo [1989]. The authors fixed three occupational status levels and a numerical scale of educational attainment. Workers whose educational level lies within plus one standard deviation of the mean educational attainment value calculated for a given occupational status are considered as over-educated. In this study, we use an alternative method, the so-called "modal approach" (Kiker et al. [1997]). This consists in analyzing the distribution of occupational status for each level of educational attainment, but without defining a number of years for reaching a given educational level. We believe that it is better not to fix a numerical scale for each educational level because there is no clear linear relationship between educational attainment and average individual productivity. Second, in the "modal" approach, unlike Verdugo & Verdugo [1989], we do not need to fix any numerical standard-deviation value limitation for variation of educational level for each type of occupation.

We compare 4 ordered types of occupational category (see Appendix A.i) with 7 ordered levels of educational attainment (see appendix A.ii). We thus have $4 \times 7 = 28$ possible combinations of educational level and occupational category. Let the total number of workers be 100, n_e being the percentage of individuals with educational attainment e and n_c the percentage of individuals in occupational category c (e and c are discrete variables ranging, respectively, from 1 to 7 and from 1 to 4). We first define the modal value n_{ec}^* which is the most frequent occupational status for each educational level. Thus, for each educational level e , those with a lower occupational status than the modal value n_{ec}^* are defined as overeducated workers whereas the others hold at least an occupational status that matches their educational level.

As workers also develop skills throughout their career and can thus move up the occupational ladder thanks to their experience but also to a potential generation effect, we divide our sample into four age categories: ages 17-30, 31-40, 41-50 and 51-60, so that we actually consider four separate occupation/educational attainment matrices (Table 1).

Table 1
Observed education-occupational matrices (weighted percentages) for workers by age

Workers aged 17-30 Education/Occupation	Low skilled manual and service worker	Skilled manual and service worker	Intermediate occupation & technician	Manager/professional	Total
Primary or lower- secondary	7,4	3,3	1,3	0,0	12,0
Intermediate vocational	10,4	10,2	2,8	0,1	23,5
Vocational upper secondary	6,7	9,3	2,4	0,1	18,5
General upper secondary	2,7	2,9	1,8	0,4	7,7
2 years higher ed.	2,7	6,1	9,2	1,4	19,4
3/4 years higher ed.	1,2	1,5	5,7	1,1	9,5
≥5 years higher ed.	0,2	0,5	1,4	7,3	9,4
Total	31,3	33,8	24,7	10,3	100,0
Workers aged 31-40 Education/Occupation	Low skilled manual and service worker†	Skilled manual and service worker†	Intermediate occupation & technician	Manager/professional	Total
Primary or lower- secondary	8,5	4,6	1,7	0,2	14,9
Intermediate vocational	10,1	10,8	3,4	0,7	25,0
Vocational upper secondary	2,6	4,7	3,7	0,6	11,7
General upper secondary	1,5	2,2	1,7	1,2	6,5
2 years higher ed.	2,0	3,1	8,4	2,9	16,5
3/4 years higher ed.	1,0	1,1	5,3	3,2	10,6
≥5 years higher ed.	0,2	0,7	3,2	10,8	14,9
Total	26,0	27,2	27,4	19,5	100,0
Workers aged 41-50 Education/Occupation	Low skilled manual and service worker†	Skilled manual and service worker†	Intermediate occupation & technician	Manager/professional	Total
Primary or lower- secondary	12,8	8,9	4,3	0,7	26,6
Intermediate vocational	10,6	13,0	7,6	1,3	32,5
Vocational upper secondary	1,3	2,6	2,5	0,9	7,3
General upper secondary	1,6	0,8	3,2	0,9	6,4
2 years higher ed.	0,9	1,4	5,4	3,5	11,1
3/4 years higher ed.	0,2	0,7	2,5	4,1	7,5
≥5 years higher ed.	0,3	0,1	1,5	6,7	8,6
Total	27,7	27,4	26,9	18,0	100,0
Workers aged 51-60 Diploma/Occupation	Low skilled manual and service worker†	Skilled manual and service worker†	Intermediate occupation & technician	Manager/professional	Total
Primary or lower- secondary	16,0	10,0	7,8	2,5	36,3
Intermediate vocational	6,7	13,3	6,8	2,6	29,4
Vocational upper secondary	0,1	0,4	4,2	1,3	5,9
General upper secondary	0,2	1,9	2,8	2,4	7,2
2 years higher ed.	0,4	0,1	2,7	3,3	6,5
3/4 years higher ed.	0,1	0,1	2,1	6,4	8,8
≥5 years higher ed.	0,1	0,1	1,7	4,0	5,8
Total	23,6	26,0	28,0	22,4	100,0

The modal value is in bold and occupations matching educational level are in grey shaded cells.

Source: Trajectories and Origins, 2008, INED-INSEE.

Because workers with "primary or lower secondary education" always have a matching occupational status (Table 1), we do not consider them in our evaluation, as mentioned in section 2. The variable $suitable_job_i$ is thus defined as follows. An individual i holds a job that at least matches his or her educational level if $suitable_job_i=1$ (he/she is located in the grey zone in Table 1); otherwise he/she is considered overeducated ($suitable_job_i=0$). For instance, Table 1 indicates that among workers aged 17-30, 2.7% have two years of higher education but are working as low-skilled manual or service workers: they are classified as overeducated ($suitable_job_i=0$).

When considering the entire sample with more than primary or lower secondary education (not only migrants who arrived below age 18), we observe that approximately 22% of workers are over-educated in their current job.

4. *Econometric strategy*

The binary variable $contact_i$ which describes the way individuals found their current jobs is at the center of our analysis. Let $contact_i=1$ if the employed worker i found his/her job through personal contacts and $contact_i=0$ otherwise. So $contact_i=1$ if individual i answers "through family" or "through a personal relationship"⁷ to the question "how did you find your current job?". In our sample, 22.6% of individuals reported finding their jobs through personal contacts⁸ (Table 1).

Econometric models

We estimate the impact of $contact_i$ on $suitable_job_i$ taking into account the potential endogeneity of $contact_i$ as workers might have unobserved individual characteristics correlated with both job match quality and finding a job through contacts. To control for this endogeneity and evaluate the impact of "finding a job through contacts" on "being overeducated" we use a *recursive bivariate probit model* (Maddala [1983]; Wooldridge [2010]):

$$suitable_job_i = 1[x_i \beta_1 + \delta_1 contact_i + u_{1i} > 0] \quad (1)$$

where vector $contact_i$ is endogenous and comes from the probit evaluation

$$contact_i = 1[k_i \beta_2 + \gamma z_i + u_{2i} > 0] \quad (2)$$

where x_i and k_i contain a set of explanatory variables, z_i is the instrumental variable,⁹ β_1 , δ_1 , β_2 and γ are associate coefficients, and error terms u_{1i} and u_{2i} are distributed as bivariate normal with mean zero such that $(u_{1i}, u_{2i}) \sim N\left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix}\right)$.

⁷ Others frequent responses are "by applying directly to the firm" or "responding to an ad".

⁸ As mentioned in the introduction, it would have been interesting to distinguish between referred and non-referred job contact networks. Unfortunately, our dataset does not provide such information.

⁹ According to Wilde [2000], using instrumental variables is not necessary in *bivariate recursive probit* estimations provided that each equation includes at least one exogenous explanatory variable. Yet, this result relies heavily on the functional form assumptions. Monfardini and Radice [2008] show, for their part, that using

There are two main conditions for z_i to be a good instrument. First, it must be correlated with $contact_i$. Second, conditionally to $contact_i$, z_i should be independent of both $suitable_job_i$ and (u_{1i}, u_{2i}) . We assume that “Having sibling(s) living in France” fulfills all these conditions, notably because it has nothing to do with individual personality traits, which is essential. We will discuss all these conditions in more depth. For simplicity, we name individual i *Ego*.

The first condition is that “having sibling(s) living in France” must be correlated with *Ego*’s “probability of finding a job through contacts”. This is easily verified. In fact, several theoretical and empirical papers have shown that the larger an individual’s family and social network, the higher the probability of receiving a job offer and thus finding a job through contacts (Wahba and Zenou [2005], Calvò-Armengol and Zenou [2005]). Thus, for migrants, having sibling(s) living in France is very likely to raise their probability of receiving a job offer through contacts thanks to information passed on by the siblings¹⁰ themselves or by their friends with whom *Ego* is acquainted (weak ties in the sense of Granovetter [1973]). Our results (Table 3 equation (2)) confirm that having sibling(s) living in France significantly raises the probability of finding a job through contacts (by 0.08 points) for migrants who arrived before age 18 in France.

The second condition deserves more discussion. More than just being exogenous conditionally to $contact_i$, having sibling(s) in France for *Ego* should have nothing to do with *Ego*’s employment situation, or with *Ego*’s unobserved characteristics¹¹ that might influence his/her employment situation. We believe this is a credible assumption for many reasons:

- First, *Ego* does not decide to have brothers and sisters. However, the total number of siblings might be correlated with *Ego*’s success on the labor market since, following Becker and Lewis’s [1973] argument, the total numbers of sibling(s) might influence the time spent by parents with each child and thus the quality of education received by *Ego* (Booth and Kee [2009]) and hence his/her employment prospects. We therefore control for having at least 3 sibling(s), which is the case for two thirds of our sample. We moreover control for education attainments.
- Second, because we only consider migrants who arrived before age 18, most siblings probably also came to France as children with their family¹² so the presence of *Ego*’s siblings in France has, for the overwhelming majority of our sample, nothing to do with *Ego*’s characteristics or his/her employment situation.
- A third point must be discussed here: while the presence of *Ego*’s siblings in France is independent of *Ego*’s characteristics, what about their propensity to re-migrate to the

an instrument improves the quality of the evaluation and of the post-estimation exogeneity tests (especially when the sample size is limited). We thus include the instrumental variable z_i .

¹⁰ One can also assume that siblings are more proactive, on average, than other relatives in transmitting job offers.

¹¹ We control for a set of variables that we describe in detail later.

¹² Cases where sibling(s) have chosen to migrate to France by themselves must be very scarce.

country of origin?¹³ Flahaux [2013] proposes a literature review on migrants' reasons for returning to their country of origin. While migrants have many reasons for re-migrating to the country of origin (or elsewhere), none of them would appear to have any link to *Ego*'s situation. Indeed, most of the reasons explaining migration and return are linked to changes in individuals' own situations (El Hariri [2003]), such as a union in the country of origin, a job opportunity or a desire, for some migrants, to raise children in the cultural values of the country of origin (Razum et al. [2005]). It might also simply be that individuals wish to live close to their relatives (Domingues Dos Santos and Wolff [2010]).

- Finally, it should also be noted that the probability of *Ego* and *Ego*'s sibling(s) remaining in France is potentially higher if the family as a whole is successfully established in France; *Ego* can potentially receive help and get a good job thanks to his family's (including sibling(s) high social/occupational status). In other word, the family's social/occupational situation might influence both our instrument and our variables of interest. However, this is not a problem for two reasons. First, while such a situation may indeed exist, we believe that not migrating because of the overall family situation is very unlikely as, to our knowledge, there is no evidence for this in the literature. Second, whatever the family status/situation, we take it into account by controlling for each parent's social status (is/was a manager/professional) and for living in a sensitive urban area (hereafter referred to as ZUS, the French acronym for areas designated as sensitive by the public authorities) for *Ego* (on the assumption that living in such a neighborhood, even for *Ego*, provides an approximate indication of overall family background).

To sum up, because *Ego* does not choose to have brother(s) and sister(s) and *a priori* does not decide/influence their migration to France in our sample (we consider individuals who arrived before age 18), but also because their brother(s) and sister(s) might have many reasons for migrating that have nothing to do with *Ego* and his/her occupational situation or any characteristics of *Ego* that we do not control for, we assume that having siblings living in France is a good instrument. Besides, to evaluate the impact of taking into account the endogeneity of $contact_i$, we compare the results of model (1) with a simple probit model:

$$suitable_job_i = 1[x_i \beta_3 + \delta_2 contact_i + u_{3i} > 0] \quad (3)$$

where vector x_i contains a set of exogenous explanatory variables about the probability of being overeducated (plus a vector equal to 1 for the constant), β_3 and δ_2 are coefficients associated to the explanatory variables and $u_{3i} \sim N(0,1)$ is the error term.

Moreover, to evaluate the impact of taking into account $contact_i$ on other control variables such as gender or foreign origin, we compare the results of model (1) with a simple probit model not including $contact_i$:

$$suitable_job_i = 1[x_i \beta_4 + u_{4i} > 0] \quad (4)$$

¹³ Table 2 indicates that 88.4% of individuals in our sample have sibling(s) living in France. Among the 11.6% with no sibling(s) living in France, approximately 6% have no siblings and 6% have sibling(s) living abroad (authors' calculation).

where β_4 is a coefficient associated to the explanatory variables and $u_{4i} \sim N(0,1)$ is the error term.

Explanatory variables

Except for education, vectors x_i and k_i of models (1), (2), (3) and (4) include the same set of explanatory variables.¹⁴ Because educational attainment was used to build the variable *suitable_job_i*, we do not include it in x_i to avoid any colinearity issue between x_i and *suitable_job_i*.¹⁵ However, we include educational attainment in k_i as a few studies suggest that the lower the educational level, the greater the frequency of using contacts, even for workers with foreign origins, in France (Valat [2016], Domingues Dos Santos [2005]). This might be so because offers received through contacts do not always match workers' skills (Bentolila et al. [2010]) and low educated workers probably have fewer requirements about the type of job offer than highly educated workers who will reject the jobs they consider unsuitable. Our descriptive statistics go along with this assumption (Table 2).

In models (1), (2), (3) and (4), we also control for socio-demographic variables such as age, gender and the country of origin of workers. It is important to control for age as older individuals generally have more efficient networks (which is also suggested in Table 2), but young people can benefit from their help (Kramarz and Skans [2013]). We include both age and age squared as the effect of age on both our dependent variables might not be linear. Besides, gender is included first because women generally encounter more difficulties in the labor market (Ponthieux and Meurs [2015]), but also because they potentially have less efficient networks (Smith [2000]). Both of these arguments are reflected by our descriptive statistics in Table 2. We take into account the origin of workers because it might influence both the probability of holding a suitable job (Lindley [2009]; Chiswick & Miller [2009], [2008]; OECD [2007]) and the probability of finding a job through contacts (Frijters et al., [2005]; Domingues Dos Santos [2005]; Green et al. [1999]). We divide the population into 10 groups of different origins (Table 2). As observed in previous studies (Valat [2016]), migrants from Turkey and southern Europe more often use social contacts than other methods to find a job, whereas the opposite is true for migrants from the Maghreb and Sub-Saharan Africa. Moreover, we observe that the latter are strongly represented among overeducated workers whereas the opposite is true for workers from Portugal.

We also control for the household/family situation. More precisely, we distinguish individuals in a couple and others because those who have a good labor market situation are more likely to form a couple (see Ekert-Jaffé & Solaz [2001] for the French case), and to remain in a couple (Jensen & Smith [1990]; Amato & Beattie [2011]) and might benefit from their partner's social network. Among singles, however, we distinguish those living with children and others, as single parenthood might be a difficult situation that influences labor market behavior (greater need to work, fewer job acceptability criteria and lesser investment in the occupational sphere). Our descriptive statistics suggest that people in a couple more often benefit from contacts but are more often overqualified for their job.

¹⁴ Descriptive statistics about all variables appearing in equations (1), (2), (3) and (4) are reported in Table 2.

¹⁵ However, our main results in Table 3 Table 4 do not change when we include educational attainment in x_i .

Table 2Sample means and subsample over *suitable_job_i* and *contact_i* (weighted means)

	All	<i>suitable_job</i> =1	<i>suitable_job</i> =0	<i>contact</i> =1	<i>contact</i> =0
Holding a suitable job	63,4	100,0	0,0	58,4	64,9
Job found through contacts	22,6	20,8	25,7	100,0	0,0
Has sibling(s) leaving in France	88,4	89,6	86,2	90,5	87,8
Origin					
French overseas department	4,4	4,2	4,6	4,8	4,2
Algeria	13,7	12,9	15,0	8,2	15,3
Morocco/Tunisia	17,6	17,3	18,1	14,4	18,5
Sub-Sahara Africa	5,9	4,8	8,0	3,3	6,7
Asia [#]	5,7	6,4	4,5	5,8	5,6
Turkey	4,4	4,0	5,0	7,1	3,6
Portugal	16,8	18,4	14,1	21,5	15,4
Spain/Italy	12,2	12,3	12,1	17,4	10,7
Other EU-27	6,5	5,8	7,8	5,0	7,0
Other countries	12,8	14,0	10,9	12,5	13,0
Female	46,1	39,1	58,3	44,0	46,7
Age	37,2	37,8	36,2	39,0	36,7
Household/family situation					
Couple	73,5	72,6	75,0	75,7	72,8
Single	17,7	18,4	16,4	15,1	18,4
Single parenthood	8,9	9,0	8,6	9,2	8,8
Education					
Primary or lower-secondary	45,1	43,3	48,2	53,7	42,6
Intermediate vocational	12,9	14,6	10,1	13,3	12,8
Vocational upper secondary	8,2	8,5	7,8	9,9	7,7
General upper secondary	15,1	15,1	15,1	10,8	16,4
2 years higher ed.	9,2	8,6	10,4	5,0	10,5
3/4 years higher ed.	9,4	10,0	8,4	7,4	10,0
School/University only in France or finished in France	96,7	97,2	96,0	95,7	97,0
Very good command of French	90,8	91,3	90,0	85,1	92,5
No French nationality	28,5	27,8	29,7	37,8	25,8
Years in France	30,4	31,0	29,4	31,9	30,0
Father is/was an manager/professional	6,8	7,0	6,4	3,6	7,7
Type/size of locality of residence					
Rural	12,4	12,8	11,8	13,8	12,0
< 200 000 inhabitants	27,9	28,0	27,6	24,4	28,9
≥ 200 000 inhabitants	24,0	23,1	25,5	24,2	23,9
Paris	35,7	36,1	35,1	37,5	35,2
Lives in a sensitive urban area (ZUS)	15,5	15,2	16,0	15,2	15,5
Number of siblings ≥ 3	66,0	65,4	67,0	60,7	67,6
Number of observations	1165	736	429	297	868

[#] Vietnam, Laos, Cambodia.

Source: Trajectories and Origins, 2008, INED-INSEE.

We include a set of dummy variables indicating the level of integration in French culture and society as it can affect immigrants' sociability and job search method¹⁶ as well as their ability to find a good job in the host country. More precisely, we take into account the place where individuals completed their education (educated entirely in France or at least partially in France, which represents more than 95% of our sample,¹⁷ vs. only abroad), their

¹⁶ Individuals less integrated in the host country will probably more often use informal job search methods such as social relations.

¹⁷ This is expected as we only consider individuals who arrived before age 18.

level of fluency in French which is very good for 90% of our sample and lower for those having used contacts (see Battu & Zenou [2010] or Lazear [1999] on the question of language and sociability of minorities and OECD [2007] and Dustmann and Van Soest [2002] on the issue of job match quality¹⁸), the number of years spent in France (which is a little higher for those with a suitable job and who have used contacts) as well as the number of years squared to evaluate a potentially nonlinear effect and the fact that they have French nationality or not (not having French nationality can make access to the labor market more difficult, see Fougère et Safi [2009] which might explain the higher recourse to social contacts for those who are not French, see Table 2).

Finally, we include a dummy indicating whether the locality of residence has a population of more or less than 200,000 (we distinguish Paris which is a particularly vast and dense area), is a smaller urban area or a rural area. There are more opportunities for workers in large cities and thus a lower probability of mismatches. Furthermore, density is generally higher in large cities. Density influences the number of contacts each individual has and thus the probability of finding a job through networks (Wahba & Zenou [2005]). The probability of being in contact with individuals of different social circles is higher in dense areas, but this is only partly reflected in our descriptive statistics (Table 2).

5. Results and concluding discussion

Table 3 reports the results of the four models.¹⁹ They indicate that finding a job through contacts considerably improves the probability of holding a job that matches qualifications for migrants who arrived in France before age 18. Table 3 also indicates that it is important to correct for the endogeneity of $contact_i$ (cf. the comparison between the *recursive bivariate probit* model and the *probit model* (3)). More precisely, we observe that finding a job through contacts significantly raises the probability of holding a job that at least matches qualifications, by 0.44 points, whereas the impact is negative and significant when not correcting for endogeneity. Our empirical strategy is also confirmed by the fact that ρ (or ρ), which stands for the correlation between error terms u_{1i} et u_{2i} , is negative and significantly different from zero. This means that unobserved personality traits or other unobserved characteristics importantly and negatively²⁰ affect both the probability of finding a job through contacts and job suitability. Another important point is that our instrument is significantly correlated with the probability of finding a job through contacts. All these observations are robust to gender: using contacts more often leads to positions that match at least the modal educational level of the French population for both the women and men in our sample (Table 4, appendix B). It raises the probability of holding a suitable job by at least 0.47 points of probability for women and 0.41 points for men. The empirical strategy is also validated for both sexes.

¹⁸ Those with a lesser command of French more often use contacts to find a job (Table 2).

¹⁹ Parameters are estimated through maximum likelihood.

²⁰ This is what we observe from model (3) when not controlling for the endogeneity of $contact_i$.

Table 3
Holding a suitable job and finding a job through contacts

	Bivariate recursive probit				Probit		Probit	
	(1)		(2)		(3)		(4)	
	<i>Hold a suitable job</i>		<i>Job found through contacts</i>		<i>Hold a suitable job</i>		<i>Hold a suitable job</i>	
	Marg. eff.	Std-Err.	Marg. eff.	Std-Err.	Marg. eff.	Std-Err.	Marg. eff.	Std-Err.
Job found through contacts	0,44***	(0,01)			-0,09***	(0,03)		
Has sibling(s) living in France			0,08***	(0,03)				
Origin								
French overseas department	-0,01	(0,07)	0,05	(0,07)	0,05	(0,08)	0,04	(0,08)
Algeria	0,00	(0,05)	-0,11**	(0,05)	-0,11*	(0,06)	-0,10*	(0,06)
Morocco/Tunisia	-0,02	(0,05)	-0,04	(0,05)	-0,07	(0,06)	-0,07	(0,06)
Sub-Sahara Africa	-0,02	(0,05)	-0,09	(0,06)	-0,14**	(0,06)	-0,13**	(0,06)
Asia [#]	-0,01	(0,05)	0,03	(0,05)	0,03	(0,06)	0,02	(0,06)
Turkey	-0,11**	(0,05)	0,10**	(0,05)	-0,05	(0,06)	-0,06	(0,06)
Portugal	Ref.		Ref.		Ref.		Ref.	
Spain/Italy	-0,04	(0,05)	0,03	(0,05)	-0,03	(0,06)	-0,03	(0,06)
Other EU-27	0,03	(0,06)	-0,01	(0,07)	-0,02	(0,08)	-0,01	(0,08)
Other countries	-0,01	(0,06)	0,01	(0,06)	-0,01	(0,06)	-0,02	(0,06)
Female	-0,10***	(0,02)	-0,01	(0,02)	-0,18***	(0,03)	-0,18***	(0,03)
Age	0,03**	(0,01)	-0,00	(0,01)	0,04**	(0,01)	0,04***	(0,01)
Age squared	-0,00**	(0,00)	0,00	(0,00)	-0,00**	(0,00)	-0,00**	(0,00)
Household/family situation								
In a union	Ref.		Ref.		Ref.		Ref.	
Single	0,04	(0,03)	-0,03	(0,03)	0,03	(0,04)	0,03	(0,04)
Single parent	0,02	(0,04)	-0,09*	(0,05)	-0,03	(0,05)	-0,02	(0,05)
Education								
Intermediate vocational			0,03	(0,03)				
Vocational upper secondary			0,06**	(0,03)				
General upper secondary			0,03	(0,03)				
2 years higher ed.			-0,01	(0,02)				
3/4 years higher ed.			-0,08*	(0,04)				
≥5 years higher ed.			Ref.					
School/University only in France or completed in France	0,07	(0,07)	-0,03	(0,07)	0,08	(0,07)	0,09	(0,07)
Very good command of French	0,06	(0,04)	-0,07*	(0,04)	0,03	(0,05)	0,04	(0,05)
No French nationality	-0,07**	(0,03)	0,08***	(0,03)	-0,02	(0,03)	-0,03	(0,03)
Years in France	0,01	(0,01)	-0,00	(0,01)	0,00	(0,01)	0,00	(0,01)
Years in France squared	-0,00	(0,00)	0,00	(0,00)	-0,00	(0,00)	-0,00	(0,00)
Father is/was a manager/professional	0,11**	(0,05)	-0,14**	(0,06)	0,02	(0,06)	0,03	(0,06)
Type/size of locality of residence								
Rural	-0,02	(0,04)	0,01	(0,05)	-0,00	(0,05)	-0,01	(0,05)
< 200 000 inhabitants	Ref.		Ref.		Ref.		Ref.	
≥ 200 000 inhabitants	-0,03	(0,03)	0,05	(0,03)	0,01	(0,04)	0,01	(0,04)
Paris	-0,01	(0,03)	0,06*	(0,03)	0,04	(0,04)	0,03	(0,04)
Lives in a sensitive urban area (ZUS)	0,00	(0,03)	-0,04	(0,03)	-0,02	(0,03)	-0,02	(0,03)
Number of siblings ≥ 3	-0,02	(0,03)	0,02	(0,03)	-0,02	(0,04)	-0,02	(0,04)
Pseudo R2					0,059		0,053	
atrho			-17,9 (p-value=0,00)					
Log pseudolikelihood			-1332,894		-721,593		-725,657	
Number of observations	1165		1165		1165		1165	

All coefficients are marginal effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

[#] Vietnam, Laos, Cambodia.

Source: Trajectories and Origins, 2008, INED-INSEE.

Another result is revealed by the comparison between model (1) and (4): taking into account the probability of finding a job through contacts does not have the same effect for all workers.²¹ For instance, we observe that including the variable *contact_i* explains a large part of the lower probability of holding a suitable job for immigrants with North African and Sub-Saharan African origins in comparison with the reference group (migrants from Portugal). One can assume that immigrants with African origins, in comparison with immigrants from Portugal, are disadvantaged by a lack of efficient job contact networks. Conversely, when the probability of finding a job through contacts is taken into account, it appears that migrants from Turkey actually have a lower probability of holding a suitable job, which means that they probably have effective job contact networks. We also find that including *contact_i* raises the probability of holding a suitable job for women even if the difference with men remains large (0.10 points of probability). This means that job contacts networks are an even more important way of finding a suitable job for migrant women than for men, which is also confirmed by our subsample evaluation (Table 4, appendix B). Finally, we also observe that taking into account *contact_i* lowers the probability of holding a suitable job for migrants not having French nationality, who probably rely more on their relationships to find a good job as already mentioned (Fougère et Safi [2009]).

Our work has several limits, however. First, while the probability of finding a job through contacts seems to vary by origin, we cannot evaluate the robustness of our result by origin, as our sample is too small. Second, the definition of the variable *contact_i* is quite broad and allows many possible scenarios. One can assume that *contact_i* does not just include the role of referral but also more basic forms of support such as guidance, advice or just timely information about job vacancies.

In spite of these limitations, it seems that for migrants, networking could be a good way to find a suitable job. We can assume that this result is due to better access to relevant job information obtained through their contacts. From a policy point of view, this has several implications. First, this tends to indicate that the social network may partially make up for inadequate information in formal recruitment procedures. Second it shows the importance of limiting social segregation by origin as a means to favor labor market integration.

²¹ To better evaluate the heterogeneity of the impact of finding a job through contacts, and to determine whether there are significant differences between groups, one could use subsamples or cross variables. However, because of our limited sample size we cannot conduct such analysis, except for gender (see appendix B)

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Appendix

A. Occupational categories and education levels

i. Occupational categories

Using the detailed information provided by the TeO survey and separating low-skilled and skilled employees according to the French study by Chardon [2002], we derive the 7 following categories as in di Paola & Moullet [2009] and Forgeot & Gautié [1997] for France:

- **Low-skilled manual worker and assimilated** (low skilled industrial, craft/farm workers, etc.)
- **Low-skilled service worker** (unskilled clerical workers, cleaners, etc.)
- **Skilled manual worker and assimilated** (skilled industrial, craft and farm workers, truck drivers, etc.)
- **Skilled service worker** (police officers, administrative public/private clerical workers, etc.)
- **Technician** (technicians, supervisors, etc.)
- **Intermediate occupation** (teachers, social and health intermediate occupations, public sector intermediate occupations, intermediate commercial occupations, etc.)
- **Management and professionals** (independent professionals, public and private sector executives, teachers and researchers, engineers, entertainment and arts occupations, etc.)

We then define the 4 ordered categories:

- **Low-skilled manual worker and assimilated + Low-skilled service worker**
- **Skilled manual worker and assimilated + Skilled service worker**
- **Technician + Intermediate occupation**
- **Management and professionals**

ii. Levels of educational attainment

We have the 7 following ordered categories:

- **Primary or lower secondary** (no qualifications, French "CEP", "BEPC", or equivalent)
- **Lower-secondary vocational qualification** (French "CAP", "BEP", or equivalent)
- **Upper-secondary vocational qualification** (French "baccalauréat professionnel", or equivalent)
- **General upper secondary qualification** (French "baccalauréat général", or equivalent)
- **“2 years” of higher education** (French "premier cycle universitaire", "BTS", or equivalent)
- **“3/4 years” of higher education** (French "second cycle universitaire", or equivalent)
- **Equal or more than “5 years” of higher education** (French "3ème cycle universitaire", "grande école", or equivalent).

B. Bivariate recursive probit by gender

Table 4
Holding a suitable job and finding a job through contacts by gender

	Bivariate recursive probit for male				Bivariate recursive probit for female			
	(1)		(2)		(1)		(2)	
	<i>Holds a suitable job</i>		<i>Job found through contacts</i>		<i>Holds a suitable job</i>		<i>Job found through contacts</i>	
	Marg. eff.	Std-Err.	Marg. eff.	Std-Err.	Marg. eff.	Std-Err.	Marg. eff.	Std-Err.
Job found through contacts	0,41***	(0,02)			0,47***	(0,02)		
Has sibling(s) living in France			0,14***	(0,04)			0,08**	(0,03)
Origin								
French overseas department	0,00	(0,10)	-0,03	(0,11)	-0,03	(0,09)	0,11	(0,08)
Algeria	0,06	(0,06)	-0,19***	(0,07)	-0,05	(0,07)	-0,05	(0,06)
Morocco/Tunisia	0,04	(0,06)	-0,17**	(0,07)	-0,09	(0,07)	0,08	(0,07)
Sub-Sahara Africa	-0,05	(0,08)	-0,18**	(0,08)	-0,00	(0,08)	-0,03	(0,07)
Asia [#]	0,01	(0,07)	0,03	(0,07)	-0,01	(0,07)	0,02	(0,06)
Turkey	-0,07	(0,07)	0,06	(0,07)	-0,15**	(0,07)	0,13*	(0,07)
Portugal	Ref.		Ref.		Ref.		Ref.	
Spain/Italy	-0,01	(0,07)	0,05	(0,07)	-0,06	(0,07)	0,01	(0,07)
Other EU-27	0,09	(0,10)	-0,05	(0,10)	-0,02	(0,09)	0,01	(0,08)
Other countries	0,01	(0,08)	-0,04	(0,09)	-0,03	(0,08)	0,04	(0,07)
Age	0,01	(0,02)	0,00	(0,02)	0,04*	(0,02)	-0,00	(0,02)
Age squared	-0,00	(0,00)	0,00	(0,00)	-0,00*	(0,00)	0,00	(0,00)
Household/family situation								
Couple	Ref.		Ref.		Ref.		Ref.	
Single	-0,00	(0,04)	-0,01	(0,05)	0,10**	(0,05)	-0,08	(0,05)
Single parenthood	0,08	(0,09)	-0,22**	(0,09)	0,00	(0,05)	-0,05	(0,04)
Education								
Vocational diploma			0,05	(0,05)			0,03	(0,05)
Vocational high school diploma			0,03	(0,06)			0,09*	(0,05)
General high school diploma			0,08	(0,07)			0,03	(0,06)
2 years after high school			0,04	(0,07)			-0,03	(0,05)
3/4 years after high school			0,00	(0,06)			-0,10**	(0,05)
≥5 years after high school			Ref.				Ref.	
School/University only in France or completed in France	0,12	(0,09)	-0,03	(0,10)	-0,00	(0,10)	0,01	(0,10)
Very good command of French	0,00	(0,05)	-0,05	(0,05)	0,17**	(0,07)	-0,12**	(0,06)
No French nationality	-0,05	(0,04)	0,06*	(0,04)	-0,10**	(0,04)	0,09**	(0,04)
Years in France	0,01	(0,01)	-0,01	(0,01)	-0,01	(0,01)	0,00	(0,01)
Years in France squared	-0,00	(0,00)	0,00	(0,00)	0,00	(0,00)	-0,00	(0,00)
Father is/was a manager/professional	0,17**	(0,08)	-0,36***	(0,14)	0,04	(0,07)	-0,05	(0,07)
Type/size of locality of residence								
Rural	-0,00	(0,07)	-0,03	(0,07)	-0,04	(0,06)	0,03	(0,06)
< 200 000 inhabitants	Ref.		Ref.		Ref.		Ref.	
≥ 200 000 inhabitants	-0,04	(0,04)	0,06	(0,04)	-0,01	(0,05)	0,02	(0,04)
Paris	-0,06	(0,04)	0,05	(0,04)	0,04	(0,05)	0,06	(0,04)
Live in a sensitive urban area (ZUS)	-0,03	(0,05)	0,06	(0,05)	-0,03	(0,05)	0,00	(0,05)
Number of siblings ≥ 3	0,01	(0,04)	-0,05	(0,04)	-0,00	(0,04)	-0,04	(0,04)
atrho	-13,5 (p-value=0,039)				-16,3 (p-value=0,000)			
Log pseudolikelihood	-663,463				-635,942			
Number of observations	611				554			

All coefficients are marginal effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

[#] Vietnam, Laos, Cambodia.

Source: Trajectories and Origins, 2008, Ined-Insee.