JOB SEARCH INTENSITY AND THE ROLE OF SOCIAL NETWORKS IN FINDING A JOB IN ARAB COUNTRIES: A CASE STUDY OF ALGERIA AND JORDAN

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Abstract. Using nationally representative data from Jordan and Algeria, this paper shows that social networks are crucial in labor market intermediation in Arab countries. We make use of binary and ordered probit regressions, corrected for sample selection using Heckman model, to investigate determinants of job search intensity and determinants of the probability of finding a job through social contacts. After factoring the sample selection, our findings suggest that the use of population density as a proxy for the size and strength of social networks may be only appropriate for minorities and immigrants studies. We propose that strong ties (closer friends and relatives, and may be friends on social media) may be more crucial in job finding than weak ones (number of inhabitants in adjacent areas). On average, the analysis shows that the process of job search is more intensive in Jordan compared to Algeria. Among others, household wealth, local unemployment rate, region, previous labor market experience, and to some extent education, appear to exert significant roles in determining intensity. Importantly, the study finds that social networks are a popular method to find a job in Algeria and Jordan but not for skilled jobs. Such methods increase the probability of obtaining less secured informal jobs. Finally, the study shows also that despite the importance of public sector agencies in job search process, less than 5% in Algeria and 9% in Jordan of employed youth state that such agencies have helped them transit into employment.

Classification JEL : C25, J23, J64, O12.

Keywords: Search intensity, job search methods, social networks, labor market, Algeria, Jordan.

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1. Introduction

Socioeconomic instability that erupted recently in many Arab countries has emphasized the vulnerability and fragility of their labor markets, which are characterized with high overall and youth unemployment rates. Better understanding of job matching and labor market intermediation can enhance labor market policy making, particularly in terms of selecting effective instruments of youth employment. Utilizing relatives, neighbors, friends, communal ties in searching for and finding jobs is a widespread phenomenon in Arab countries (Lassassi and Muller 2013), including Algeria and Jordan. More than 80% and 60% of jobseekers in Algeria and Jordan report that they employ social networks in searching for employment. This phenomenon extends to advanced economies as well. In USA studies, for example, social contacts are the main channel of finding jobs of 30% to 60% of those currently employed (Ioannides and Loury, 2004). Social networking, as a less costly method, can enhance information transmission in labor market and in effect improves the match between workers and firms (Munshi, 2003). The available literature on role of social networks and their effectiveness in the labor market is multifaceted and exists mainly in the developed countries (Lassassi and Muller 2013). On the other hand, the literature in developing countries is limited.

The current study attempts to enrich the literature on job search methods and the role of social contacts in the developing countries, focusing the attention on Jordan and Algeria. It mainly tries to answer the following questions:

1. What is the role of social contacts and ties in the process of searching for and finding jobs?
2. What are the factors determining the use of social networks in finding jobs compared to other job search methods?
3. What are the differences and similarities of job search strategies between Algeria and Jordan?

After the introduction, the paper is outlined as follows: Section 2 will review the existing literature on job search and social networks, focusing the attention on the studies conducted in Arab countries, labor markets indicators will be handled in Section 3. Section 4 discusses the methodology followed and the data used in the paper, Section 5 discusses descriptive results. In Section 6, we present our empirical results, and Section 7 concludes the work.

2. An overview of the literature

The available literature pertaining to the role of networks of personal contacts in mediating employment opportunities has been largely conducted on advanced labor markets, using economic, sociological, and psychological models[3]. In the Arab countries, similar to other developing countries, this area has attracted few studies. In this section, we first highlight the most important findings reported in the economic literature in general and then we will shed more light on the studies carried

[3] For an extensive survey of economic studies see Jackson (2011).

out on Arab labor markets. Comparable findings of other studies will be also referred to in our descriptive and empirical analyses (see below).

In addition to highlighting the importance of them in job-search, labor economists have studied potential influences of social networks, as an informal information mechanism, on the probability to find jobs, to have more offers, and to earn higher wages. The available studies have utilized different descriptive and multivariate methods in their attempts to produce robust results. Overall, the studies of job search reveal that around 50% of individuals obtain jobs or information on job opportunities through friends and relatives (Zenou and Wahba, 2005; Patacchini and Zenou, 2012). This is evident in many studies (Holzer, 1987; Blau and Robins, 1990; Ioannides and Loury, 2004; Zenou and Wahba 2005; Topa, 2001). Lassassi and Muller (2013) point out that studies on job search through social ties prove that such channels are typically productive in terms of providing more job offers compared to other formal methods and firing rates (see also Bewley, 1999; Simon and Warner, 1992). On the other hand, there has been mixed evidence on potential influences of social ties on wages earned subsequently (Marmaros and Sacerdote, 2002; Berardi, 2013). Most recently, Dang (2015) utilizes an IV approach in estimating the effect of social networks on income dynamics of migrants in Vietnam, and confirms that the effect is significantly positive. Also, the use of social networks typically differs by age, region and gender, (Lassassi and Muller, 2013).

Most of empirical evidence approximates unobserved social networks by using population density and information on ethnic minorities or migrants. Few studies apply direct measures to directly observe social networks (e.g., number of employed friends, number of schoolmates, and number of greetings in special occasions), Dang (2015).

Literature in Arab countries

As mentioned earlier, the role of social networks in labor market dynamics has comparatively attracted little attention in developing countries. This section is devoted to review studies conducted in the Arab region. In his attempt to compare between the effects of informal and formal institutions on labor market dynamics in Egypt, using in-depth interviews, Assaad (1993) shows that hiring workers in the construction activities, particularly craft workers, depends partly on personal ties and social networks. The study also indicates that family long-lasting ties with employers, in the informal sector, can also enhance the opportunity of a jobseeker to gain access to an apprenticeship. Using the same data in the latter study, Assaad (1997) provides evidence on the role of kinship ties and social networks in segmented labor markets. Among others, his findings show that there exists a rationing of entry into the construction sector determined significantly by a worker's age and region of birth. The study, however, provides inconclusive statistical evidence on the contribution of kinship ties and social networks to determining the rationing process.

By extending a model developed earlier by Calvo-Armengol and Zenou (2005), Zenou and Wahba (2005) offer evidence on the effect of social contacts in the process of job search in the context

of Egypt. Specifically, the latter study handles the relationship between the size and quality of social networks and job-finding, and the processes of information acquisition and transmission from friends and relatives to job seekers. The study uses population density as a proxy for the size of social networks and classifies workers according to their education into two groups (low educated and high educated), with the assumption that the former group uses only social contacts and ties while the latter type uses both formal and informal channels. The empirical results they show match very well the theoretical expectations of their model. In general, the study first indicates that the probability to find a job through social networks rises and is concave with population density. Second, this relationship decreases with education and local unemployment rates and surprisingly becomes negative when population exceeds a certain size.

Lassassi and Muller (2013) analyze Algerian data obtained from the Employment Survey carried out by the National Office of Statistics (1997, 2003 and 2007) and employment matching data gathered in 2005 using a regional survey that aimed to explore labor dynamics in Algeria, Morocco and Tunisia. Primarily, the paper is concerned with showing how social networks influence the probability to find a job and identifying the characteristics of employers that are most likely to utilize such networks in hiring decisions. Their empirical logit models follow Zenou and Wahba (2005) in using population density to represent the size of social networks. Also, they modeled the proportion of workers hired through social networks in companies using a Heckman specification to correct for selection problems. Most importantly, among others, Lassassi and Muller (2013) show the following results:

1. High proportion of job seekers, regardless of gender and age, utilize friends and relatives in their search for a job and this proportion has increased markedly from about 57% in 1997 to 86% in 2007.
2. Around 40%, in 2003 and 2007, of all workers identify that they obtained their jobs through personal or family relationships. This pattern tends to increase slightly for men from during the period 2003 to 2007, while social networks are found to contribute less and less in helping women transit into employment.
3. The overall role of government employment offices, specifically ANEM, in job search is high but it has declined dramatically over the period from 2003 to 2007, particularly for males. In contrast, the contribution made by ANEM in job finding appears very low, as reported by the current employed, particularly in terms of male workers. Over time, employed females, nevertheless, appear to have increased their reliance on this channel in job finding. Those women reporting that they were recruited through the government employment office increased by more than a double; form nearly 7% to 16% in 2003 and 2007 respectively.

4. Searching for and finding a job through friends and relatives are reported to be more concentrated among youth (15-24) and workers living in rural areas. The same patterns apply for less educated in the context of both job seeking and recruitment.
5. Only for men, the transmission of information through friends and relatives is significantly higher and better in big cities, suggesting a positive relationship between the size of social networks and the probability of finding a job. Analyzing the probability of finding jobs through personal ties and family relationships for males and females reveals that such networks are more important in the private sector, particularly in smaller firms.

3. Labor markets in Algeria and Jordan

The economies of both countries differ in terms of their natural resources and structure. While Algeria is classified as an energy-producing and exporting economy, Jordan, as a services economy, depends heavily on imported energy sources and in part on regional and foreign aid. However, both countries are vulnerable to external factors; basically volatile aid and energy prices. They also tend to share the fact that the recent economic growth is not sufficient to sustainably generate enough jobs (Furceri, 2012; Lassassi and Hammouda, 2012; Taghdisi-Rad, 2012). Although, they have weathered the storm of 'Arab Spring', Algeria and Jordan remain to suffer persistently from several problems encountering their labor markets.

To some extent, Jordanian and Algerian labor markets are characterized with common stylized characteristics (see Table 1). The public sector in both countries is oversized as it employs a large fraction of the workforce, around 31% in Algeria and 40% in Jordan (World Bank, 2013). According to Assad (2014), private sector in the Arab economies lack dynamism, and employment in the public sector is increasingly constrained by fiscal difficulties, leading to more growth in informality. The latter study argues that public employment, in much of the Arab world, privileges certain social groups for political motives. The size of informal sector ranges around 46 % in Algeria and 44% in Jordan (IMF, 2013; UNDP, 2013), making the generation of jobs of decent quality more difficult. Unemployment, which is more severe among females and youth, is a daunting challenge facing both economies. This is coupled with low participation rates especially for females. The national employment strategies adopted by the two countries strongly draw attention to the importance of integrating youth and females into labor market (MOL, 2011; Musette, Lassassi and Meziani. 2014). However, youth unemployment rates, as well as females', have remained in the double digits over the last decade. Youth unemployment has proven hard to resolve in both countries (Kreishan and Alhawarin, 2014; Furceri, 2012). The current population shares of 15 to 24 years-old account for about 17% and 20% of the total population in Algeria and Jordan, respectively, as shown in Table (1). The share of those younger than 15 is also substantial particularly for Jordan (around 29% versus 35%). The latter two indicators suggest that youth unemployment, particularly in Jordan, may remain high in the medium terms, and the two countries will need to create enough jobs for a large youth bulge.

Typically, low quality of human capital investments and the mismatch between them and skills demanded in the labor market are considered key driving forces of youth unemployment in both countries.

Searching for employment for long periods is horrid for significant proportion of unemployed workers particularly in Algeria. Furceri (2012) points out that nearly 50 % of unemployed in Algeria spend more than two years seeking for a job, suggesting labor market imperfections, particularly rigidity, to explain this phenomenon. Table (1) shows that long-term unemployment (i.e. unemployment spells for more than 12 months) in Algeria averages at 72.2% in 2015 (74% and 67.6% for males and females, respectively). On the other hand, in Jordan in 2014, it amounts to almost 38 % on average; 34.4 % and 46.3 %, for females and males respectively. Thus, the share of those searching for employment for less than 12 months is comparatively higher in Jordan, averaging around 62% compared with 28% in Algeria. This may be partly attributed to differences in labor market rigidity. In this context, the Labor Act in Jordan has been modified systemically over the last two decades, attempting to restructure the labor market and to curb the prevailing rigidity. This includes the introduction of short-term and flexible employment contracts. However, according to Table (1), Algeria remains to outperform Jordan in terms of participation rates. Thus, differences in long-term unemployment may also result from discouraged unemployment, which is typically not included in the traditional measurement of unemployment in both countries.

Remains to mention that the Syrian crisis has economically resulted in complicating the performance of the economy and labor market in Jordan. It is estimated that more than one million of Syrian refugees have entered the country since 2011. While, the education system graduates thousands of well-educated Jordanians, hundreds of thousands of Syrian, other Arab, and Asian workers occupy significant proportion of the jobs created inside the economy, of which the majority are low-skilled (MOL, 2104).

3.1 Labor market intermediation: The role of governments in Algeria and Jordan

Jordan and Algeria have implemented several active polices to influence the performance of their labor markets. A variety of initiatives to strength job information networks were carried out, with the aim to improve labor mobility, enhance job match, and shorten the process of job search and filling vacancies. Recently, particularly after the 'Arab Spring', more funds and concentrated efforts are devoted to employing youths in both economies.

In Algeria, (see Musette, Lassassi and Meziani. 2014), the National Employment Agency (ANEM) is the key governmental player regarding employment intermediation and labor market information. ANEM has different functions and schemes, and target groups, primarily unemployed youth. By law, private companies and municipalities must inform ANEM about job vacancies they have, beside the number of jobs they have recently created. Non-compliance results in employers to be fined and panelized. Currently, this agency attempts to vocationally integrate unemployed youth into

labor market through promising schemes in co-operation with private firms. Among others, for instance, it tries to match unemployed youth with available jobs through subsidized work contracts, irrespective of youth's education levels. On the other hand, the Public Service Directorate is the main governmental branch in charge of announcing and managing public sector vacancies. The Algerian ministry of labor licensed private employment agencies to get involved in improving the employability of Algerians. Several private internet networks of employment are available as well.

Since 2006, the Department of Employment and Training (DET), an autonomous agency supervised by the Ministry of Labor (MOL), has run labor market intermediation function in Jordan (Angel-Urdinola *et al*., 2012). It also holds the responsibility of authorizing and supervising private employment agencies, which amount to 73 companies in 2016. Practically, DET and its branches in various governorates require private employers to report their employment needs, and simultaneously keep records of local job seekers.

Recently, among others, two innovative procedures have been carried out to improve the effectiveness and reliability of transmitting information about jobs. These are: National Employment Campaigns (NECs) and National Electronic Employment System (NEES). NECs are organized by (MOL) every year and gathers employers and job seekers to interact face-to-face. MOL launched NEES and interconnected it to several municipalities and civil society organizations to facilitate the process of obtaining information on labor market and job opportunities. NEES's website provides diverse methods of job search for both national employers and workers[4]. In addition, this system gathers and distributes information on job opportunities available for Jordanians in the regional labor markets, particularly the Gulf countries. Other private internet networks exist and provide similar services for job seekers in Jordan. The Civil Service Bureau (CSB) governs public sector employment, which currently includes also independent public institutions, such as the universities and municipalities. Most of university and college graduates are accustomed to applying to CSB to queue for a job in the public sector. According to (MOL, 2011) the number of queuing applicants, who passed CSB's exams, amounted to 218,000 in 2011.

The Ministry of Labor in Jordan currently offers several training and employment programs to help overcome the current mismatch between job seekers and employers in the private sectors. For instance, special schemes target recent medical sciences graduates by supporting their training in private hospitals for 12 months. Similar programs devote funds for ICT graduates and for training and employing Jordanians in traditionally unattractive activities, chiefly restaurants and fuel stations (MOL, 2014).

However, the performance of public agencies in charge of employment services in MENA region is not satisfactory and largely underdeveloped. The role of government in labor market intermediation is constrained by a number of obstacles, including lack of proper funding, training, and

[4] See http://www.nees.jo/Home.aspx.

enough staff. Moreover, public agencies function in a very complicated socio-economic environment, including high rates of unemployment and informality. Angel-Urdinola *et al* (2012).

Table 1: Labor market indicators in Algeria and Jordan

	Algeria (2015)			Jordan (2014)		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
Population **(10^3)**	20235	19728	39963	3441	3234.3	6675.3*
0 - 14 years (%)	29.2	28.4	28.8	35.1	33.2	34.6
15 – 24 years (%)	16.8	16.6	16.7	20.6	18.9	19.8
25 - 64 years (%)	48.3	49	48.7	39.3	43	40.6
65 and over (%)	5.7	6	5.9	5	4.9	5
Labor force participation rate (%)	66.8	16.4	41.8	60	12.6	36.4
Labor force participation rate (%) - Youth 15-24 years	41	8.8	25.2	38.1	7.6	23.2
Employment-population ratio (%)	60.2	13.6	37.1	53.7	9.8	32
Employment-population ratio (%) - Youth 15- 24 years	30.1	4.8	17.7	28.1	3.5	16.1
Unemployment rate (%)	9.9	16.6	11.2	10.1	20.7	11.9
Unemployment rate (%) - Youth 15 - 24 years	26.7	45.3	29.9	26.4	53.3	30.6
Unemployment rate (%) - 25 years and over	7	12.3	8	6.1	15	7.5
Long-term unemployment (%) (>=12 months)	74	67.6	72.2	34.4	46.3	37.9

Source: Official labor force survey - Algeria 2015 (ONS) – Jordan 2014 (DoS) Employment and unemployment survey.*Excluding the Syrian refugees and foreign workers.

4. Methodology and Data considerations

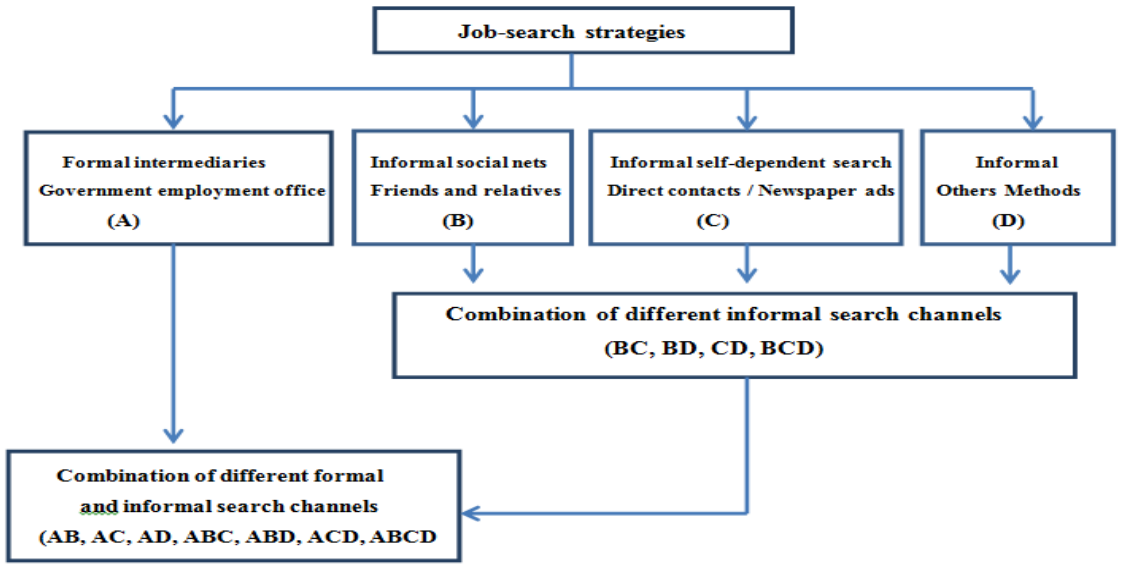
In this paper, the descriptive and multivariate analyses primarily rely on Algerian and Jordanian micro data obtained from nationally representative labor market surveys. The first wave of Jordan Labor Market Panel Survey (JLMPS) is the source of our Jordanian data. The JLMPS is a large scale survey offering very detailed data on a wide range of labor market aspects and covering (5102) households. The later survey was conducted in 2010 by the Department of Statistics (DoS) with the collaboration of the Economic Research Forum (ERF). In the context of Algerian data, we use the Labor Force Survey carried out in 2010, which encompassed (14592) households and was administered by the National Statistical Office (ONS).

Both surveys have useful, and to some degree comparable, job searching and finding questions. Workers are asked to report the main method of job search used to find their current jobs. To the question *How did you find this job?* The Algerian workers can choose one answer from a list of seven alternatives: Answering a newspaper ad, personal or family relationship, contest or exam, approaching the business, assigned by the school after training, through public agencies, or other methods. On the other hand, JLMPS asks an employed to choose the first and second most important search methods out of twelve options: TV/newspaper ads, visiting institutions and workplaces,

relatives, friends and current and previous officials, applying in Ministry of Labor offices, applying in Civil Service Bureau, internet sites, using land lines and cell phones, waiting at a place for workers gathering, seeking a private project, seeking a private project finance, through family, and others. In this paper we take into account only the first choice. To harmonize Algerian and Jordanian data, in terms of the employed, we have grouped the answers into five categories: 1) Newspaper ads, 2) Friends and relatives, 3) Asking at work place, 4) Government employment office, 5) Other methods.

Similar scenarios were applied in both surveys of our data to observing methods through which currently unemployed job seekers are looking for jobs. However, unlike employed, unemployed individuals can choose more than one answer. For Algeria they can choose from four options: registration with a labor office, asking at the work place, personal relationships, and other methods. JLMPS uses the same above choices provided to Jordanian employed, excluding the last two options (others and through family). Similarly, to make our analysis in both countries comparable, we harmonize data by grouping jobseekers' answers into four categories: 1) Government employment offices, 2) Asking at the work place, 3) Friends and relatives, 4) Other methods. In effect, three types of search strategies are possible for an unemployed (see Figure 1). An individual can choose to utilize a single channel in the search for a job, whether formal or informal. Alternatively, a search strategy may combine two or more of the informal methods. Finally, unemployed may combine formal with informal methods.

Figure 1: Possible job-search strategies available for unemployed (grouped into four categories)



Source: Prepared by the authors.

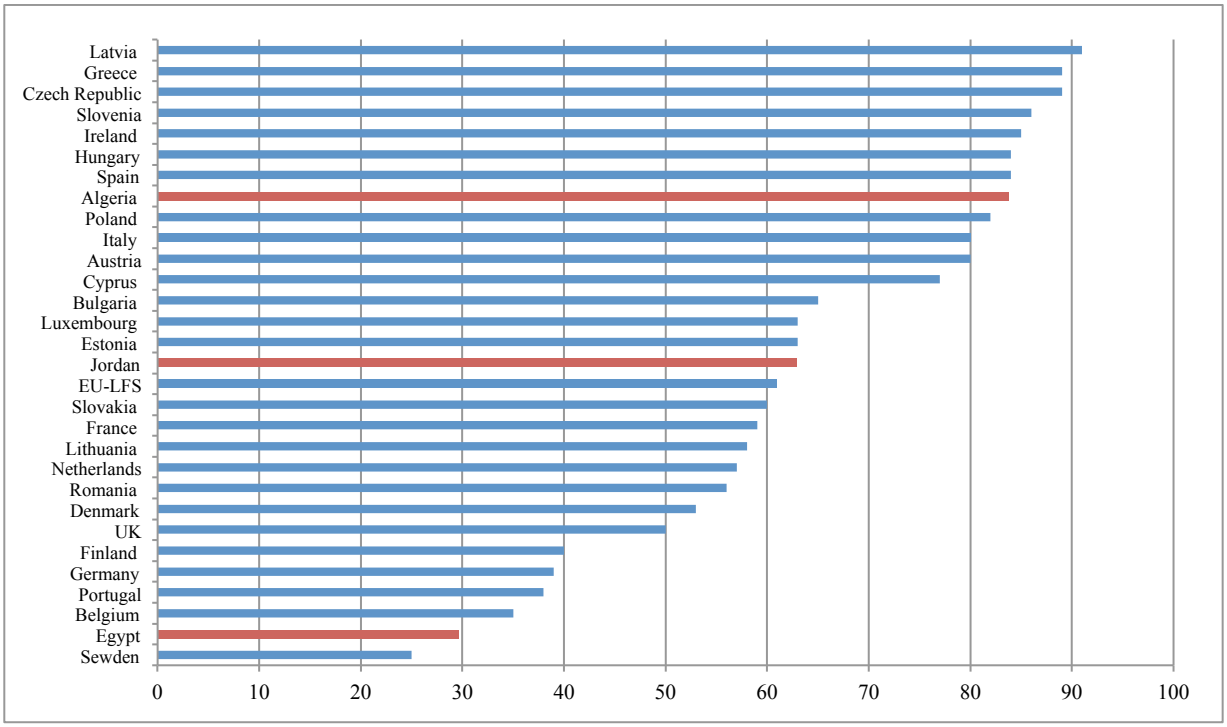
4.1. Methods of estimation

For the purpose of this study, in addition to descriptive statistics, we estimate a number of probit models of job search and finding, focusing the attention on youth. Firstly, the analysis handles

determinants of search intensity by means of ordered probit model. To detect and statistically correct any potential sample selection bias, we utilize a Heckman model. In the literature, there are different methods of measuring job-search efforts. Among others, Barron and Mellow (1979) utilize time spent searching for a job as an approximation of the search effort. Others use the number of contacts with employers Kahn and Low (1990). Eriksson *et al* (2002) use a combined index of several search methods used and time spent looking for work. There is a lack of information on the time spent in looking for jobs and number of contacts with potential employers in the available data in Jordan and Algeria. Therefore, the current work follows a strategy similar to that applied by Holzer (1988), who measured search efforts by the number of methods used by job seekers during their search for employment.

Secondly, we analyze the determinants of the probability of an individual to find a job through personal or family relationships using probit model. In such a setting where a researcher focuses on a sub-sample drawn from a random selected sample, it is likely to have what is called the sample selection bias. To correct for this possibility, we draw on Heckman selection procedures, which will verify and quantify the selection bias in the estimated dependent variable.

Figure 2: Proportion of unemployed using social networks in job-search by country in %, regardless of gender and age



Source: Several statistics reports (OECD, Dos, ONS, CAPMAS).

5. Descriptive analysis

Social networks potentially augment the efficiency of the labor market and serve as an information transmission device that helps labor market in job matching and in minimizing search

frictions. Job-search statistics, see Figure 2, demonstrate that extensive utilization of social networks is not limited to developing countries, but extends well beyond that to most of the emerging and developed economies. However, job search using various methods in developed labor markets, including relatives and friends, tend to be more effective in ironing out labor market fractions and imbalances. Youth unemployment rate in OCED countries in 2015, (https://data.oecd.org) for example, averages at 13.9% (13.4% and 14.3% for youth women and men, respectively), compared to more than 27% (more than 45% for women) in Algeria and Jordan (See Table 1 above).

This part of the study analyzes the importance of informal referrals from friends and relatives in searching for a job. The descriptive overview will also show which job search methods are more effective and more readily conductive to obtaining a job. Furthermore, the analysis involves some reflections on differences, by gender and age group, in intensity of job search in both countries.

5.1 Job search methods and intensity

Table (2) summarizes responses of current unemployed on whether they have utilized one or more of job-search methods. In Figure (3), their responses are employed to construct an indicative measure of intensity, which facilities the comparison process. For example, if all relevant respondents report that they use all the available methods (grouped into four methods in the current study), intensity will be at maximum (100%). To accomplish the construction of this simple measure, original percentages were weighted by multiplying them by 1, 0.75, 0.5, 0.25, if the jobseekers use four methods, three methods, two methods and one method, respectively[5]. Several important patterns can be drawn from Table (2) and Figure (3). *Firstly*, job seekers considerably rely on friends and relatives as a key job search method, both in Algeria and Jordan (Nearly 83% and 64% in Algeria and Jordan, respectively). However, while this method turns out to be the most frequently used method in Algeria, it ranks second in Jordan, with "*Asking at the work place*» being the first method. This pattern occurs regardless of age groups (i.e. youth and adults) and gender. Whereas the *"Government employment offices*" method is common among female job seekers, it tends to be extremely less popular than using friends and relatives among unemployed youth and adult males in both countries. For Algeria, similar overall results were observed in earlier data (Lassassi and Muller (2013).

Secondly, unemployed females in Jordan are markedly less likely to employ friends and relatives in their search for work, while they depend more heavily on the other methods. For example, around 50% of youth female jobseekers in Jordan use this informal method in comparison with nearly 72% for their male counterparts. In case of Algeria, such indicators are also in favor of males, but with much slighter differences.

Some of the above patterns may partly explain the differences in long-term unemployment between the two countries. The search period of the vast majority of jobseekers in Algeria, see Table

[5] For a broader view on the distributions of job-search strategies utilized by youth and adults, for both countries and by gender see annex1.

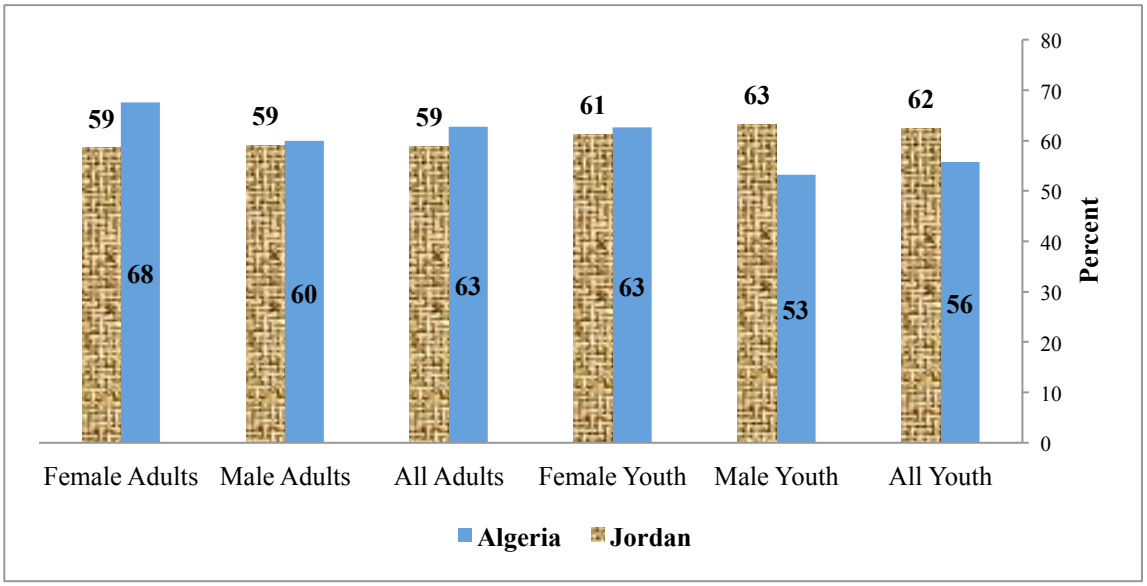
(1), exceeds one year, or even two years as reported by Furceri (2012), who suggests labor market rigidity as a driving force of this phenomenon. However, this does not necessarily mean that labor market in Jordan matches between jobs and jobseekers more efficiently, as such patterns may practically reflect differences in participation as well, particularly when it comes to females in Jordan. Ordered probit (with sample selection) estimation is also applied in this study to test the statistical significance of gender and age group differences in job search intensity (see below).

Table 2: Search methods used by job seekers

	Algeria (2010)			Jordan (2010)		
Youth (15-24)	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Government employment offices	59.9	53	78.7	44	33.9	60.5
Asking at the work place	52.5	46.1	69.8	69.6	75.3	60.5
Friends and relatives	83.4	85.9	76.7	63.7	71.9	50.3
Others	25.1	25.3	24.6	63.7	65.7	60.5
Adults (25-59)	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Government employment offices	71.6	65.8	81.6	35.7	23.8	54.7
Asking at the work place	67.3	61.1	77.8	65.5	71.3	56.3
Friends and relatives	84	86.8	79.3	61.9	67.1	53.6
Others	27.7	26.2	30.2	62.1	65.7	56.3

NB: Unemployed could choose more than one answer. Source: Computed by the authors from the official labor force survey in Algeria 2010 and the JLMPS 2010 for Jordan.

Figure 3: Job-search intensity simple measure for young and adults by gender in Jordan and Algeria*



**Intensity adds to 100% and this exists only if all job seekers use all the available methods (4 methods in our study). If all of them use three methods (out of four) then intensity= 75%, and so on. Original percentages were weighted (4 methods multiply by 1, 3 methods multiply by 0.75, 2 methods multiply by 0.5, and 1 method multiply by 0.25).*

Thirdly, statistics shown in Figure 3 suggest that Jordanian unemployed youth have greater job-search intensity, because intensity among them amounts to 62% compared with 56% in Algeria. This pattern appears to result from the considerable difference prevailing between males in both countries, as male jobseekers in Jordan seem to search more intensively than their Algerian counterparts (63% vs. 53%). The opposite occurs when one compares between female unemployed looking for employment in the two countries, however, with a small difference (63% vs. 61%). Moreover, our analysis of intensity shows that Algerian adult turn to have more efforts in job search compared with their counterparts in Jordan, particularly in the case of females. Over-generationally, we observe conflicting patterns in both countries. In Jordan, unlike Algeria, job intensity is found to increase when one contrasts between youth and adults, as the former's intensity is over the latter's by around 3 %. Interestingly, in the context of Algerian youth and adult job seekers, females emerge to be more active in search process than males, with a percentage difference in intensity ranging between 8% and 10%. In Jordan, in line with other statistics characterizing the situation of females in the labor market, unemployed women search for a job less intensively compared with men. Intensity analysis remains only indicative and descriptive, particularly across the two countries, as we grouped job-search methods in only four methods. In general, our descriptive results tend to underestimate intensity in both countries, particularly in Jordan. Regardless of age group and gender, in addition to the main three methods reported in Table 2, between 62 and 64 % of unemployed in Jordan use other methods. In comparison, less than 31% of Algerian job seekers report that they have utilized other methods. This finding supports the above pattern that using relatives and friends is the main method of looking for work in Algeria, while in Jordan it is widely used but together with a lot of methods[6].

To what extent does the use of friends and relatives help an unemployed get employed?

Informative job-search methods should principally enhance the efficiency of labor market by attaining a better allocation of resources (i.e. labor). Given the distressing indicators characterizing labor markets in Algeria and Jordan (e.g. youth unemployment and low participation rates, particularly women's), the data provided in Table 3 can suggest only how effective each job search route is compared with the other methods. Also, one must bear in mind that the responses analyzed in Table 3 are taken from currently employed workers about how they found their way into labor market, while Table 2 depends on responses reported by current unemployed. Accordingly, the comparison between the latter two tables in order to reflect on the benefits of each job-search method will be only suggestive. A perfect evaluation of the overall effectiveness of the job search process necessitates more intensive individual level data.

[6] According to our data, there exist insignificant differences between young and adult jobseekers in employing the internet. Such a finding comes possibly due to that fact that internet-based job finding and matching services have not received enough attention in the region.

As a whole, social networks by means of obtaining information or referrals from friends and relatives *comparatively* prove to be the most, or among the most, effective job-search channels as reported by employed themselves. One average, between a quarter and a half of all adult and youth respondents state that they became employed relying largely on friends and relatives. Although the significance of social networks in job-finding for Jordanian women is substantial and has risen, comparing between youth and adult females, such channels play less important function than directly contacting employers and applying through public sector agencies. This result holds true also in case of Algerian adult females, who identify that government offices are more vital in this process (see Lassassi and Muller, 2013 for earlier comparable findings for Algeria). Overall, interacting directly with employers plays a smaller role in Algeria, ranking second and third to using friends and relatives, for youth and adult correspondingly. However, the effectiveness of this method tends to have clearly improved as its percentage contribution increased over-generationally (almost 20% for youth versus 14.5% for adults).

Table 3: Percentage of jobs found by employed workers using each method

	Algeria (2010)			**Jordan (2010)**		
Youth (15-24)	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Newspaper ads	4.5	4.1	7.4	14.7	15.4	10.3
Friends and relatives	**51.5**	**53.4**	**35.5**	**39.4**	**40.6**	**31.7**
Asking at the work place	20	20.6	15	30.3	29.2	37.2
Government employment office	4.5	2.9	17.5	9	7.8	16.5
Others	19.5	19	24.6	6.6	7	4.3
Adults (25-59)	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Newspaper ads	9.2	9	10.2	11.3	12.5	6.5
Friends and relatives	**39.5**	**42.2**	**24.7**	**33**	**35.2**	**26.3**
Asking at the work place	14.5	16	6.1	31.1	32.3	24.4
Government employment office	8	6.6	15.9	20.6	15.6	40.7
Others	28.8	26.2	43.1	4	4.4	2.1

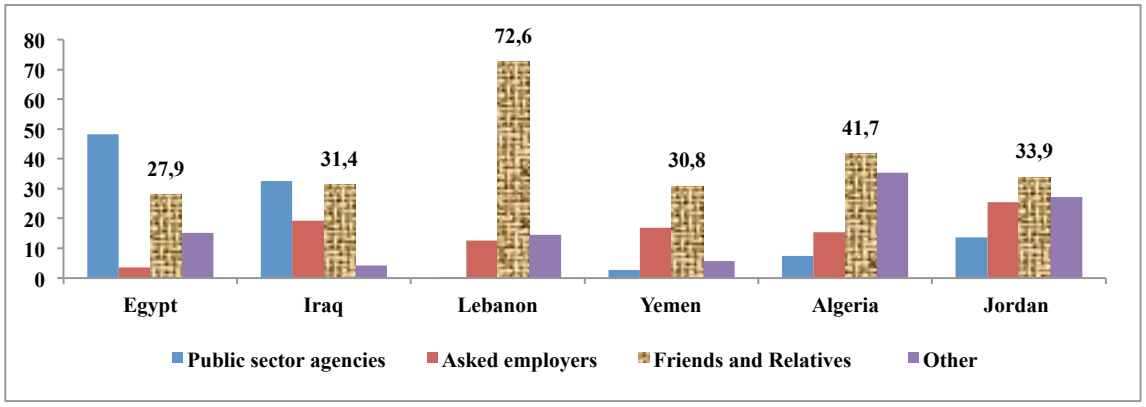
Source: Computed by the authors from the official labor force survey in Algeria 2010 and the JLMPS 2010 for Jordan.

One interesting aspect of Table (3) is that the importance of social networks in finding jobs is progressively higher as age decreases, irrespective of gender. Relaying on friends and relatives is on average responsible for about 52% and 39% of all hires in terms of young employed in Algeria and Jordan, respectively, compared to apparently lower percentages in the case of adults. Except for Algerian women, the opposite conclusion holds for the role of government employment search methods, as its contribution to finding jobs has decreased dramatically (by around 50%) in the two countries. Such gender and age differences will be statistically tested in our empirical analysis using probit models (see below).

As depicted in Figure 4, which is concerned with workers aged between 15 and 65, the phenomenon of depending on social networks in employment extends to other Arab countries. Except

Egypt and to some extent Iraq, it is evident that social networks are the main method in such a process, with its contribution varying between almost 73% in Lebanon and 28% in Egypt.

Figure 4: role of social contacts and other methods in finding a job in a group of Arab countries



Source: Several statistics reports- Dos (Jordan), ONS (Algeria), CAPMAS (Egypt), COSIT (Iraq), CAS (Libya), CSO (Yemen).

6. Estimation results

6.1. Determinants of Search Intensity

The number of methods used in job search by currently unemployed is used to measure job search intensity. We estimate the parameters of an ordered probit with sample-selection model for the outcome of search intensity. Our selection model relies on estimating the probability of an individual to participate in labor market[7]. Gender, experience before losing the job, household characteristics (wealth, number of unemployed and employed in a household) and characteristics of area (region, urbanization rate, and local unemployment rate) are used as outcome covariates[8]. Age and level of education are used as outcome covariates, and we also expect that they affect selection. Additional covariates for selection are: density of population, vocational training, marital status, number of children aged between 5 and 14 years in a household and interaction between gender and number of children under 5 years in a household. We use the factorial interaction of gender and children in selection equation. This specifies that the number of children and gender affect selection, and it allows the effect of the number of children to differ among men and women.

The ordinal outcome equation is: $y_j = \sum_{h=1}^{H} v_h 1\,(k_{h-1} < x_j\,\beta + u_{1j} \le k_h) \ldots\ldots [1]$

Where x_j is the outcome covariates, β is the coefficients, and u_{1j} is a random-error term. The observed outcome values $v_1,\ldots,v_H$ are integers such that $v_i < v_m$ for $i < m$. $k_1,\ldots,k_{H-1}$ are real numbers such that $k_i < k_m$ for $i < m$. k_0 is taken as $-\infty$ and k_H is taken as $+\infty$.

[7] We also corrected selectivity by the probability of unemployment (see annex 3). In general, the results of the estimated models with different dependent variables of selection are comparable.
[8] See annex 2 for the description of variables.

The selection equation is: $S_j = 1\ (z_j\ \gamma + u_{2j} > 0)$…… [2]

Where $S_j = 1$ if we observed y_i and 0 otherwise, z_j is the covariates used to model the selection process, γ is the coefficients for the selection process and u_{2j} is a random-error term.

The Wald test is highly significant, indicating a good model fit. The likelihood-ratio test indicates that we can reject the null hypothesis that the errors for outcome and selection are uncorrelated. This means that we should use the ordered probit with sample-selection model instead of the simple ordered probit model[9].

Table 4 reports the estimated coefficients associated with each variable expected to influence the probability of a jobseeker to search for a job more intensively together with their standard errors. For the two countries, using the same explanatory variables, we estimate several models for the sample as whole and for youth samples. In the context of Algeria, except for the variables *number of employed in the household*, and *south region*, all coefficients emerge significant at least at 10% significant level in the estimated models. On contrary, the ordered probit models produce a different situation in Jordan, as the effects of several variables are found statistically insignificant. Overall, the most important results shown in Table 4 are as follows:

In line with our descriptive analysis shown above, regardless of age group, there is no significant *gender difference* in job search intensity in Jordan, while female jobseekers in Algeria tend to be significantly more dynamic in this process than their Algerian male counterparts. Particularly in Algeria, adult jobseekers are more likely to use more methods than their younger counterparts. In Jordan, this result is statistically significant only for those aged 35 and above, who typically represent unimportant proportion of the unemployed. These patterns are possibly attributable to difference in long-term unemployment rates within and between the two countries. Economically active women in Algeria face lower levels of long-term unemployment compared with Algerian men, resulting in making them more optimistic about finding jobs more quickly. Adult Algerian unemployed tend to intensify their job search as they are more likely to have spent longer time searching for jobs, with the expectations to obtain jobs sooner. Long-term unemployment rates in Jordan are extremely lower than those prevailing in Algeria. Jordanian female jobseekers are at a greater risk of long-term unemployment in comparison with males.

The observed effects for *household wealth* index are apparently consistent in both countries. These patterns also remain significant when we consider only youth jobseekers. Household wealth exerts a positive impact on the probability of having more search intensity. Wealthy families are more capable of securing funds, means and times for their unemployed members to get involved more actively in looking for jobs. In the context of the Arab culture, unemployed belonging to wealthy households may also look for jobs more intensely due to their familial strong and long-lasting links

[9] See Table 1 – annex 5.

with firms, which can allow unemployed to rapidly obtain more information on job vacancies and ease their contact with employers.

Predictably, higher local unemployment rates are associated with lower incidence of job search intensity in both countries. This result is compatible with the idea that optimism levels enjoyed by unemployed about expected gains of their job search decrease as unemployment rises. The higher the unemployment rate in a region, the fewer opportunities to find a job and the less the unemployed intensify their search. Under these conditions, they will likely favor a single method in the job search or may transit into being discouraged unemployed. Böheim and Taylor (2001), Jones (1989) and Wadsworth (1991) find a similar result for Britain.

Arulampalam *et al.* (2000), Gregg (1996, 2001) for England, find that the previous experience in unemployment for men has repercussions on their future behavior in the labor market. The overall coefficients of *previous work experience* variable are negative for those who have already experienced a period of activity in their working life which means that the unemployed who have never worked in the past devote more efforts in the search for a job. However, the effect of this variable is only significant at 10% level and insignificant when we run the analysis on youth samples in Algeria and Jordan, respectively. Most of the youth have short periods of experience compared to adults. One possible explanation is that unemployed with longer previous experience probably know the most effective methods of finding a job and therefore they use certain methods. A second explanation is that these people are less motivated to seek employment and hence their effort in job search is less important compared to the first-time unemployed.

While they play a significant role in Algeria, differences in education emerge to weakly influence job search intensity in Jordan. Currently unemployed holding post secondary education are most likely to utilize several search methods compared to less educated. In Jordan, negative significant coefficients, at 10% level, are observed only for primary or lower levels of education. Blau and Robins (1990) for the United States, Schmitt and Wadsworth (1993) for England and Sabatier (2000) for France find similar results. One possible explanation is that educated people find it increasingly difficult for them to enter the labor market, which forces them to make more efforts in the search for employment because the economy creates less and less skilled jobs. Unemployment affects skilled individuals by depreciating their human capital. Therefore, educated people are more incited to quit unemployment quickly and provide more effort in job search than less educated ones.

Unemployed in Jordan, particularly youth, living in areas closer to the capital (in the middle areas compared to the north and south regions) have greater tendency to use more channels of job search. Similar results are observed for Algeria for the middle areas compared with the north, which include the capital city of Algeria, for both the whole sample and the youth. Capitals and their surrounding areas are typically characterized with more employment opportunities, which may encourage youth unemployed to intensify their job search. This strongly applies for Jordan, where most of the population lives in the middle, particularly in Amman, and modestly applies in the context

of Algeria. However, Algerian youths coming from the southern part of the country appear to have a greater intensity of job search. Several multinational oil and gas producing companies are located in the south of Algeria. This probably induces the unemployed in these regions to intensify their search for well-paid employment in those companies. Nevertheless, these oil companies, including the national company, typically recruit few staff from the inhabitants of these regions. In 2014, young unemployed people from some regions of the south revolted to denounce this situation of marginalization. Of the twelve private intermediation agencies, no agency is located in the southern regions. The later may also explain why people in the south rely more on themselves in looking for jobs. Regional differences are important in terms of employment policy. Equity for labor market integration in the different regions of the country is important. Policy makers need to invest more in these regions and encourage the private sector to settle in these regions. Introducing the urbanization rates into the analysis produces mixed effects that are extremely small in magnitudes as well.

Among the interesting results are those describing the effects of number of employed and unemployed in a household. While the number of employed does not exert significant impact in both labor markets, the existing of an additional unemployed in Jordanian households raises the probability to search more intensively. The existing of several unemployed in a family living in Jordan imposes further pressure on its resources and may fuel the process of job search of the unemployed. Schmitt and Wadsworth (1993) find similar results for men who are unemployed in Great Britain in the 1980s. However, in Algeria this effect is overall weak and negative, and insignificant in the case of youth jobseekers. On the whole, differences between the two countries in income and expenditure obligations encountering families may facilitate clarifying this finding. Average income levels are lower in Jordan, and due to fiscal constraints the government has eliminated partly and sometimes completely subsidies of many commodities and services, most importantly oil, health, housing and higher education.

Estimation of the selection equation

The estimation of the selection equation produces satisfactory results. Predictably, we find a concave relationship between participation in the labor force and age. On the other hand, a convex relation between population density (calculated at the governorate level) and the probability of participation in the labor force is observed. The variable marital status is highly significant but has an opposite effect in the two countries (Algeria vs Jordan). Human capital is also an important factor. In this exercise, we measured human capital by level of education and vocational training. The results indicate that the higher the level of education of a person, the greater the likelihood of being active. For vocational training, we found that people who have received vocational training are more likely to be active than those who have not received training. The probability of participation in the labor force is lower for women than for men. The participation rate of women in the MENA region is among the lowest in the world. The labor market in the MENA region does not offer the best conditions for the

Table 4: Determinants of Job Search Intensity

	Algeria		Jordan	
	Total	**Youth**	**Total**	**Youth**
Demographic characteristics				
Gender (Ref: Female)	-0.251***	-0.225**	-0.0585	0.238
Male	(0.0754)	(0.106)	(0.211)	(0.342)
Age				
25-34 years	0.229***	-	0.0576	-
	(0.0569)		(0.0928)	
35 and more years	0.284***	-	0.550**	-
	(0.0803)		(0.272)	
Human Capital (Ref: University)				
Without instruction	-0.512***	-0.708**	-0.605*	-0.739
	(0.190)	(0.322)	(0.345)	(0.522)
Primary	-0.639***	-0.799***	-0.263	-0.539*
	(0.0886)	(0.135)	(0.183)	(0.320)
Intermediate	-0.555***	-0.633***	0.0588	-0.216
	(0.0689)	(0.109)	(0.176)	(0.305)
Secondary	-0.411***	-0.387***	0.0561	-0.00399
	(0.0695)	(0.118)	(0.150)	(0.215)
Experience				
Work experience (Ref: No)	-0.149***	-0.132*	-0.212**	-0.215
Yes	(0.0490)	(0.0770)	(0.0998)	(0.149)
Household Characteristics				
Household wealth	0.0790***	0.0715**	0.105***	0.109**
	(0.0183)	(0.0284)	(0.0345)	(0.0451)
Number of unemployed in the household	-0.0651**	-0.0274	0.152**	0.179**
	(0.0303)	(0.0462)	(0.0666)	(0.0808)
Number of employed in the household	0.00142	-0.00562	0.00108	-0.0468
	(0.0202)	(0.0310)	(0.0341)	(0.0458)
Characteristics of area				
Region (Ref: North)				
Middle (Hauts Plateaux)	-0.316***	-0.171**	0.165	0.260*
	(0.0526)	(0.0747)	(0.117)	(0.149)
South	0.103	0.344***	0.208	0.330
	(0.0709)	(0.0986)	(0.171)	(0.210)
Urbanization rate	-0.00454***	-0.00669***	0.00560*	0.00750*
	(0.00135)	(0.00189)	(0.00300)	(0.00393)
Unemployment rate at district level	-1.211***	-1.455***	-1.535*	-2.637**
	(0.308)	(0.471)	(0.870)	(1.138)
Selection equation				
Density	-0.0311***	-0.0388***	-0.132**	-0.128*
	(0.00889)	(0.0121)	(0.0568)	(0.0769)
Density square	0.000737***	0.000965***	0.000171	0.000134
	(0.000235)	(0.000322)	(0.000119)	(0.000159)
Age	0.294***	-	0.329***	-
	(0.00913)		(0.0713)	
Age square	-0.00414***	-	-0.00637***	-
	(0.000142)		(0.00138)	
Marital status (Ref: Others)	0.580***	0.779***	-0.619***	-0.634***
Married	(0.0455)	(0.160)	(0.0958)	(0.149)
Without instruction	-1.107***	-0.452***	-1.641***	-1.814***
	(0.0713)	(0.142)	(0.201)	(0.288)
Primary	-0.411***	0.226***	-1.407***	-1.592***
	(0.0435)	(0.0634)	(0.0947)	(0.128)
Intermediate	-0.383***	-0.167***	-1.279***	-1.377***
	(0.0348)	(0.0467)	(0.113)	(0.158)
Secondary	-0.584***	-0.576***	-0.299**	-0.291
	(0.0393)	(0.0540)	(0.119)	(0.193)
Vocational training (Ref:No)	0.559***	0.745***	0.293***	0.357***
	(0.0330)	(0.0443)	(0.0924)	(0.133)
Number of people 5 – 14 years in the household	-0.0393***	-0.105***	-0.00389	0.00503
	(0.0132)	(0.0171)	(0.0275)	(0.0371)
1.sexe	1.102***	0.747***	1.493***	1.492***
	(0.0307)	(0.0406)	(0.0881)	(0.114)
Children under 5 years in the household	-0.184***	-0.0308	-0.218***	-0.109
	(0.0320)	(0.0512)	(0.0522)	(0.0828)
Gnder#c.Number of children under 5 years in the household	0.294***	0.0502	0.463***	0.213*
	(0.0404)	(0.0616)	(0.0812)	(0.118)
Constant	-6.442***	-2.369***	-3.834***	0.362***
	(0.158)	(0.166)	(0.919)	(0.130)
/cut1	-2.177***	-2.552***	-0.835**	-0.655**
	(0.170)	(0.255)	(0.414)	(0.507)
/cut2	-1.216***	-1.644***	-0.0410*	0.0943*
	(0.176)	(0.276)	(0.437)	(0.527)
/cut3	-0.0377**	-0.533**	0.713*	0.940*
	(0.188)	(0.308)	(0.461)	(0.551)
/athrho	-0.304***	-0.458***	-0.545***	-0.261
	(0.0672)	(0.122)	(0.186)	(0.335)
Rho	-.2951774	-.4284041	-.496731	-.2553208
	.0613116	.0992467	.1397554	.3134382
Sample size	**38691**	**14089**	**3066**	**1361**

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Computed by the authors from the official labor force survey in Algeria 2010 and the JLMPS 2010 for Jordan.

work of women including married women, (Al-Qudsi, 1998). The presence of children under the age of 5 years in a household has a negative effect on participation in the labor force in both Algeria and Jordan. We find a similar effect for the presence of children aged between 5 and 14 in a household at least for the case of Algeria. Justifiably, an interaction term of the presence of children under 5 in the household with sex shows a negative effect on the participation of women. Standard economic theory expects that a woman with dependent children will be more reluctant to work outside her household, particularly if taking care of children by alternative ways is costly.

6.2. Determinants of employment using social networks

As shown above using the descriptive analysis, social networks by means of obtaining information or referrals from friends and relatives *comparatively* appear to be the most, or among the most, effective job-search method as reported by employed themselves. To delve more deeply in the role of social networks in finding jobs, probit models with selection are run on the employed samples[10]. In both models reported in Table 5 below, we corrected selectivity by estimating the probability of an individual to be employed[11]. The dependent variable is binary taking one if social networks are the main method of obtaining a job and zero for otherwise. In Table 5 (Model 1) the estimation incorporates the same explanatory variables for the two countries for the whole sample and for youth, Table 5 (Model 2) repeats the same estimation using additional variables available only for one of the two countries. The data we use allow us to control for different variables at the individual, household and region levels. Similar to previous studies in this field, we use population density as a proxy for the size of social networks. Density, gender, year of entry to the labor force, job characteristics, household characteristics and characteristics of area are used as explanatory variables. We also integrate age and level of education into our models and into the estimation of selection equations. Additional covariates for selection are: vocational training, marital status, number of children aged between 5 and 14 years in a household and interaction between gender and number of children under 5 years.

The probit model with sample selection assumes that there exists an underlying relationship

$y_j^* = x_j \beta + u_{1j}$ …… [3] ***Latent equation***

Such that we observe only the binary outcome: $y_j^{probit} = (y_j^* > 0)$ …... [4] ***Probit equation***

The dependent variable for observation j is observed if:

$y_j^{select} = (z_j \gamma + u_{2j} > 0)$ …… [5] ***Selection equation***

Where : $u_1 \sim N(0,1)$ $U_2 \sim N(0,1)$ corr $(u_1,u_2) = \rho$

[10] The Wald test is highly significant, indicating a good model fit. The likelihood-ratio test indicates that we can reject the null hypothesis that the errors for outcome and selection are uncorrelated. This means that we should use the probit with sample-selection model instead of the simple probit model. See Table 1 – annex 5.

[11] We further also corrected selectivity by probability of being economically active. The results are reported in annex 4. In general, the results of the estimated models with different dependent variables of selections are comparable.

The results are reported in Table 5, in which our analysis in the first column shows the results for the sample as a whole in each country, and the last one is concerned with depicting the results that are obtained when the analysis is run only on the youth samples.

Looking at the results, *population density* as a measure of the size and strength of social contacts shows a small positive effect on the probability of finding a job, and only for Algerian sample as a whole. In the case of Algeria, the probability of finding a job through social networks decreases with network size (in the more dense areas)[12]. In areas where the population density is higher, relational networks become ineffective for people seeking for a job because the sharing of information about job vacancies is more extensive than in less dense areas. Zenou and Wahba (2005) found a concave relationship between the probability of finding a job through networking and network size (measured by population density at the governorate level) in the case of Egypt.

In Jordan this effect is insignificant. In the context of the youth in both countries, a greater size of social networks does not improve the probability of employment through friends and families. This means that networks approximated by local population density does not work for the population as a whole and may mainly work for minorities and immigrants. This finding also means that strong ties (closer family members, relatives and friends) are more important than weak ties (population in adjacent areas) in information diffusion and spillovers.

To some degree, other reported results confirm the later conclusion. The *region* variable reveals similar interesting results in Tables 5 (Model 1 and 2). Living in the most heavily populated areas, the capitals and their urban suburbs, decreases the probability of obtaining employment through social networks compared with the other methods. Typically, population in rural areas and small cities in most of the Arab world consists of big families and tribes and therefore have arguably better social contacts. Currently employed coming from the middle and southern areas of Algeria are significantly more likely to find a job using social contacts, regardless of age group. Likewise, compared to northern areas in Jordan, those living in middle areas; including Amman, have a lower probability of getting jobs using social networks. The same trend is observed for the southern part of the country, which is less populous than the north, however, with smaller magnitude than middle areas. Also *household wealth* emerges to intervene positively in the probability of finding a job through social networks. This variable is overall significant in both countries except for the youth in Jordan. This would suggest that the effectiveness of the network is also related to social background as represented by assets possessed by an individual's family. Further, when we include nationality of a worker into the estimation, which is available only for Jordan, it appears that Jordanian workers are less likely to find a job counting on social ties compared to non-Jordanian workers. This might capture the same effects found in the literature pertaining to the importance of kinship ties among foreign workers and immigrants in labor markets.

[12] See annex 5, For Predicted Probability of Getting Job through Family Relationship.

Additional results

A number of interesting aspects emerge from Table 5. In both countries, using social contacts do not appear to enable individuals to improve their chances of getting decent and formal jobs. This can be generally drawn from estimated coefficients related to the variables: affiliation to social security, legal sector, economic activity, firm size (for Algeria only), hourly wage (for Jordan only), and primary job requires any skill (for Jordan only). The analysis confirms that those utilizing social ties and contacts are more likely to obtain less secured private jobs in smaller in size firms. Such search methods also tend to match unemployed with jobs in some economic activities that traditionally characterized with higher risk of informality. This effect is maximum in construction activities in Jordan and trade activities in Algeria. Using the Jordanian data, our results are not supportive to the hypothesis that jobs found through friends and relatives require skills and augment wages.

Relatively, particularly for Jordanian workers, the estimation suggests that the role of social networks as mean channel of finding a job improves with *age*. This may imply that as workers age they might accumulate more contacts or become more efficient in utilizing information coming from friends and relatives. Concerning the levels of education, the estimates indicates that those holding secondary education and less are more likely to find a job through social ties and contacts. This pattern tends to be more acute among youth in both countries. The inverse effect of education has been emphasized by the literature (for Arab countries, see Zenou and Wahba, 2005).

Finally, and importantly, the probability of obtaining employment through social contacts emerges to be significantly influenced by short term conditions prevailing in labor markets. To investigate this possibility, our models divide employed respondents according to the year of their entry to labor market. Specifically for Algeria, the likelihood of getting employed through social networks varies significantly from period to another. This result may be largely driven by fluctuations in business cycle in the short run. In Jordan, the positive effects of this variable turn out significant only at the level of 10% for the whole sample in one of our models, and only for those who have entered the labor market during the period (2006-2010). The latter finding, which is also evident for Algeria, seems to be intuitive as it may partly reflect the effects of the global financial crisis that had hit the world economy during that period. In such an environment, job seekers may find it more difficult to find a job through formal challenges and therefore increase their reliance on social ties.

Table 5: Determinants of getting a job through social networks

	Model 1				Model 2			
	Algeria		Jordan		Algeria		Jordan	
	Total	Youth	Total	Youth	Total	Youth	Total	Youth
Density	0.0448***	0.0277	0.0104	0.00747	0.0437***	0.0227	0.0158	0.0226
	(0.00938)	(0.0222)	(0.0537)	(0.0921)	(0.00946)	(0.0226)	(0.0538)	(0.0929)
Density	-0.000991***	-0.000699	-4.39e-05	7.78e-05	-0.000943***	-0.000554	-5.44e-05	6.10e-05
	(0.000242)	(0.000576)	(0.000117)	(0.000198)	(0.000243)	(0.000586)	(0.000117)	(0.000199)
Demographic characteristics								
Gender (Ref: Female)	0.151**	-0.0876	0.105	0.0125	0.173**	0.00916	0.102	0.00941
Male	(0.0679)	(0.170)	(0.156)	(0.395)	(0.0683)	(0.174)	(0.159)	(0.402)
Age								
25-34 years	0.0716	-	0.172**	-	0.0699	-	0.166**	-
	(0.0437)		(0.0765)		(0.0439)		(0.0768)	
35 and more years	0.179***	-	0.314**	-	0.165***	-	0.311**	-
	(0.0557)		(0.147)		(0.0562)		(0.147)	
Human Capital (Ref: University)								
Without instruction	0.805***	0.458*	0.636***	0.354	0.801***	0.518**	0.596***	0.401
	(0.0615)	(0.255)	(0.212)	(0.471)	(0.0615)	(0.257)	(0.214)	(0.478)
Primary	0.652***	0.133	0.733***	0.674***	0.645***	0.167	0.729***	0.689***
	(0.0494)	(0.177)	(0.0993)	(0.237)	(0.0495)	(0.179)	(0.101)	(0.243)
Intermediate	0.680***	0.212	0.703***	0.536**	0.675***	0.245	0.670***	0.460*
	(0.0429)	(0.150)	(0.106)	(0.244)	(0.0429)	(0.151)	(0.107)	(0.249)
Secondary	0.439***	0.245*	0.269**	0.250	0.440***	0.283**	0.271**	0.276
	(0.0425)	(0.137)	(0.107)	(0.223)	(0.0426)	(0.139)	(0.108)	(0.225)
Year of entry to LF								
[2006 -2010]	0.153***	0.701*	0.196*	5.509	0.157***	0.708*	0.181	5.456
	(0.0444)	(0.376)	(0.110)	(283.9)	(0.0445)	(0.377)	(0.110)	(283.2)
[2001 -2005]	0.106**	0.710*	0.0670	5.545	0.111***	0.721*	0.0630	5.499
	(0.0427)	(0.377)	(0.0950)	(283.9)	(0.0428)	(0.379)	(0.0951)	(283.2)
[1996 -2000]	0.136***	0.897**	-0.00794	5.092	0.137***	0.881**	-0.0143	5.001
	(0.0383)	(0.392)	(0.0912)	(283.9)	(0.0384)	(0.393)	(0.0913)	(283.2)
Job characteristics								
Economic activity (ref: services)								
Agriculture	0.175***	0.156	0.350	0.243	0.170***	0.156	0.316	0.270
	(0.0515)	(0.110)	(0.226)	(0.336)	(0.0520)	(0.112)	(0.230)	(0.356)
Industry	0.215***	0.00998	0.129	0.126	0.259***	0.0486	0.149*	0.115
	(0.0366)	(0.103)	(0.0869)	(0.154)	(0.0374)	(0.105)	(0.0883)	(0.157)
Construction	0.0828**	-0.0533	0.211	0.764***	0.108***	-0.0173	0.209	0.721**
	(0.0374)	(0.0873)	(0.190)	(0.295)	(0.0380)	(0.0892)	(0.191)	(0.299)
Trade	0.335***	0.0739	0.228**	0.291*	0.323***	0.0306	0.229**	0.292*
	(0.0484)	(0.101)	(0.101)	(0.166)	(0.0490)	(0.104)	(0.101)	(0.168)
Affiliation to Social security (Ref:No) Yes	-0.183***	-0.187*	-0.401***	-0.443***	-0.0948**	-0.0221	-0.372***	-0.398***
	(0.0378)	(0.0973)	(0.0795)	(0.131)	(0.0417)	(0.105)	(0.0808)	(0.134)
Legal sector (Ref: Private) Public	-0.797***	-1.455***	-0.256***	-0.156	-0.714***	-1.237***	-0.250***	-0.128
	(0.0394)	(0.125)	(0.0795)	(0.155)	(0.0416)	(0.132)	(0.0807)	(0.159)
Size of enterprise (ref 250 or more)								
0 to 4 workers	-	-	-	-	0.343***	0.674***	-	-
					(0.0498)	(0.135)		
5 to 9 workers	-	-	-	-	0.429***	0.736***	-	-
					(0.0522)	(0.140)		
10 to 49 workers	-	-	-	-	0.182***	0.415***	-	-
					(0.0410)	(0.131)		
50 to 249 workers	-	-	-	-	0.206***	0.302**	-	-
					(0.0383)	(0.126)		
Looking for another job (Ref:No) Yes	-	-	-	-	-0.0316	-0.0819	-	-
					(0.0286)	(0.0622)		
Hourly Wage	-	-	-	-	-	-	-0.00522	-0.00531
							(0.00429)	(0.00650)
Primary job require any skill (Ref: No) Yes	-	-	-	-	-	-	-0.0982*	-0.0495
							(0.0585)	(0.107)
Nationality (Ref: others) Jordanian	-	-	-	-	-	-	-0.266**	-0.488***
							(0.121)	(0.187)

Table 5 continues

	Model 1				Model 2			
	Algeria		Jordan		Algeria		Jordan	
	Total	Youth	Total	Youth	Total	Youth	Total	Youth
Household Characteristics								
Household wealth	0.0637***	0.165***	0.0259**	-7.66e-05	0.0644***	0.170***	0.0332***	0.00819
	(0.0114)	(0.0275)	(0.0112)	(0.0188)	(0.0114)	(0.0279)	(0.0115)	(0.0192)
Number of unemployed in the household	-0.0177	-0.0519	-0.00181	-0.0620	-0.0190	-0.0550	0.000211	-0.0652
	(0.0238)	(0.0587)	(0.0514)	(0.0871)	(0.0238)	(0.0594)	(0.0515)	(0.0878)
Characteristics of area								
Region (Ref: North)								
Middle (Hauts Plateaux)	0.142***	0.167**	-0.298***	-0.486***	0.140***	0.175**	-0.299***	-0.481***
	(0.0326)	(0.0737)	(0.0770)	(0.137)	(0.0328)	(0.0748)	(0.0773)	(0.138)
South	0.510***	0.814***	-0.230*	-0.484**	0.497***	0.786***	-0.213*	-0.471**
	(0.0461)	(0.112)	(0.118)	(0.213)	(0.0462)	(0.113)	(0.119)	(0.215)
Unemployment rate at district level	-0.970***	-1.284***	0.0824	0.648	-0.895***	-1.106***	0.0296	0.552
	(0.154)	(0.348)	(0.758)	(1.501)	(0.156)	(0.355)	(0.762)	(1.517)
Constant	-0.985***	-0.542	-0.904***	-6.072	-1.328***	-1.315**	-0.645**	-5.604
	(0.126)	(0.543)	(0.239)	(283.9)	(0.136)	(0.576)	(0.255)	(283.2)
Selection equation								
Age	0.349***	-	0.366***	-	0.349***	-	0.366***	-
	(0.00464)		(0.0556)		(0.00464)		(0.0556)	
Age square	-0.00434***	-	-0.00565***	-	-0.00434***	-	-	-
	(5.97e-05)		(0.00105)		(5.97e-05)		0.00566***	
							(0.00105)	
Marital status (Ref: Others)	0.114***	0.0857	-0.559***	-0.508***	0.115***	0.0962	-0.559***	-0.506***
Married	(0.0275)	(0.0915)	(0.0715)	(0.125)	(0.0275)	(0.0922)	(0.0715)	(0.125)
Without instruction	-0.820***	0.200*	-1.866***	-1.680***	-0.820***	0.201*	-1.865***	-1.678***
	(0.0325)	(0.104)	(0.157)	(0.276)	(0.0325)	(0.104)	(0.157)	(0.276)
Primary	-0.490***	0.847***	-1.402***	-1.191***	-0.490***	0.848***	-1.403***	-1.192***
	(0.0294)	(0.0557)	(0.0747)	(0.127)	(0.0294)	(0.0557)	(0.0747)	(0.127)
Intermediate	-0.318***	0.455***	-1.332***	-1.072***	-0.318***	0.455***	-1.331***	-1.070***
	(0.0259)	(0.0434)	(0.0882)	(0.151)	(0.0259)	(0.0434)	(0.0882)	(0.151)
Secondary	-0.374***	0.0234	-0.410***	0.0905	-0.374***	0.0234	-0.410***	0.0909
	(0.0277)	(0.0471)	(0.0961)	(0.187)	(0.0277)	(0.0471)	(0.0961)	(0.187)
Vocational training (Ref: No)	0.513***	0.613***	0.125*	0.142	0.513***	0.613***	0.122*	0.138
	(0.0230)	(0.0362)	(0.0739)	(0.117)	(0.0230)	(0.0362)	(0.0740)	(0.118)
Number of people 5 – 14 years in the household	-0.0358***	-0.0923***	-0.0599***	-0.0483	-0.0357***	-0.0919***	-0.0599***	-0.0479
	(0.00792)	(0.0133)	(0.0216)	(0.0330)	(0.00792)	(0.0133)	(0.0216)	(0.0330)
1.sexe	-2.002***	-1.324***	2.239***	2.211***	-2.002***	-1.324***	2.238***	2.208***
	(0.0209)	(0.0352)	(0.0710)	(0.101)	(0.0209)	(0.0352)	(0.0710)	(0.101)
Children under 5 years in the household	0.152***	-0.0443	-0.183***	-0.0786	0.152***	-0.0448*	-0.184***	-0.0780
	(0.0164)	(0.0271)	(0.0387)	(0.0750)	(0.0164)	(0.0271)	(0.0387)	(0.0749)
Gnder#c.Number of children under 5 years in the household	-0.453***	-0.222***	0.499***	0.187*	-0.453***	-0.219***	0.499***	0.186*
	(0.0254)	(0.0633)	(0.0595)	(0.0997)	(0.0254)	(0.0633)	(0.0595)	(0.0998)
Constant	-5.360***	-0.833***	-5.024***	-0.0625	-5.361***	-0.844***	-5.027***	-0.0630
	(0.0920)	(0.101)	(0.734)	(0.113)	(0.0920)	(0.101)	(0.734)	(0.113)
Sample size	**46358**	**15740**	**5160**	**1852**	**46355**	**15739**	**5154**	**1847**

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Computed by the authors from the official labor force survey in Algeria 2010 and the JLMPS 2010 for Jordan.

7. Conclusions and key lessons

7.1 Conclusions

To the best of our knowledge, this study is one of few attempts that handle search intensity and the role of social ties in the Arab labor markets, particularly in Jordan and Algeria. It shows that labor market information and referrals obtained through friends and relatives emerge increasingly crucial in job-matching in both countries. Using data from nationally representative labor surveys, our results indicate that nearly 83% and 64% of Algerian and Jordanian job seekers, respectively, rely on friends and relatives. Female jobseekers in both countries, particularly in Jordan, are less likely to use these informal channels compared to males irrespective of age. While using *Government employment offices* method in looking for a job is common among female job seekers, it tends to be extremely less popular than using friends and relatives among unemployed youth and adult males in both countries. Our descriptive analysis further suggests that job search intensity is higher among unemployed Jordanian youth. Concerning the effectiveness of social networks in helping unemployed find a job,

they *comparatively* prove to be the most, or among the most, effective job-search channels as reported by employed themselves. One average, between a quarter and a half of all adult and youth respondents state that they became employed relying largely on friends and relatives, in both countries.

To delve more deeply into the above subjects, we use selectivity-corrected ordered and binary probit models to investigate the determinants of search intensity and the probability of finding a job through social networks.

In Algeria, search intensity, which is approximated by the number of methods used, appears to increase with education and household wealth, and to decrease with local unemployment rates and previous work experience. In Jordan, apart from the effect of education, which is less conclusive, the latter variables have equivalent impacts. In both countries, job seekers living in the capitals and surrounding areas have a higher likelihood of search intensity compared with other areas within each country. The number of unemployed in a household exerts a positive impact on job search only in Jordan. While female job seekers tend to search more intensively in Algeria compared with Algerian males, the results show no significant gender differences in Jordan.

The estimated probit models also attempt to investigate the variables that significantly influence the probability of a worker to find a job through social contacts rather than through other methods. The models show interesting results. First, population density as a measure of the size and strength of social contacts plays only a small positive effect on the probability of finding a job, and only for the Algerian sample as a whole. For all Jordanian workers, including youth, and youth in Algeria this effect is insignificant, as a greater size of social networks does not improve the probability of employment through friends and families. In line with these results, workers from heavily populated areas in both countries, including the capitals, are less likely to obtain jobs through social relationships compared with other areas. Also, the study shows positive effects of household wealth and an individual's age. In Jordan, foreign workers are more likely to benefit from social networks in gaining employment. These findings suggest that networks approximated by regional population density may mainly work for minorities and immigrants not for the population as a whole, particularly youth. They may also imply that strong ties (e.g. closer relatives and friends, and friendship relationships on social media) are more important than weak ties (population in adjacent areas) in information diffusion and spillovers. The empirical findings indicate that higher levels of education, particularly among youth in both countries, lead to less reliance on social contacts in attaining jobs. On the other, gender is found significant only for Algerian data, as males appear to be more likely to gain from social networks in finding a job compared with their female counterparts. However, relative to other methods, the use of social networks appears evidently to increase the probability of obtaining jobs characterized with poorer quality.

7.2 Key lessons

Policy makers must seek effective policy formulation process that facilitates non-discriminatory employment. In general, national employment policies and strategies should take into account the impact of social networks in employment and labor market participation. More investment in education and training, particularly in remote areas may enhance the efficiency of job search and equity of opportunities offered by labor markets. The findings of the study show also that despite the importance of public sector agencies in job search process, less than 5% in Algeria and 9% in Jordan of employed youth state that such agencies have helped them transit into employment. This confirms the idea that the performance of public agencies in charge of employment services in Arab region is not adequate and largely underdeveloped. In effect, policy makers are advised to pay more attention to boasting the effectiveness of public agencies. The data shown in the current study provides suggestive evidence that the society, and possibly private sector employers, favor males over female jobseekers in employing referrals from friends and relatives. Arab women have very low labor market participation and unemployment among youth females amounts to high levels. This is coupled with the fact that women are more educated and that they prefer public sector jobs. Job search difficulties may have contributed to limiting labor market opportunities available to females in both countries and may partly explain why they have lower participation rates. In Algeria, although a young woman appears to employ social networks commonly, the effectiveness of such method is very close to what is reported by their Jordanian counterparts.

In general, although the study shows that most of the patterns are similar in both countries, it indicates some differences in job search intensity, which may arguably lead to better and faster job matching. Importantly, we observe that job search intensity, particularly for youth, is on average better in Jordan. This may partly mirror differences in labor market rigidity and differences in labor market reform. For example, Jordan's Labor Act permits short-term flexible contracts, leading arguably to create more temporary employment. This in turn may fuel job search efforts. On the other hand, higher public spending on welfare and subsidies to goods and services in Algeria may also cause differences in search intensity. In Jordan, job seekers and their families find themselves increasingly pushed further into social hardship as the government has abolished most of its support to goods and services, including health, education, housing, and fuel. In effect, this may have resulted in boasting search intensity in Jordan. Interestingly, among our results that grant support to the latter finding, we find that the number of unemployed in a household improves job intensity in Jordan, whereas its effect emerges insignificant in Algeria.

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ANNEX I

Figure 1: Job search possible strategies facing an unemployed

Figure (a): Youth

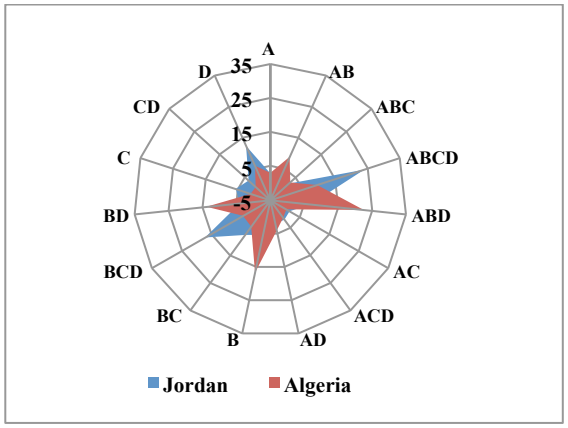


Figure (b): Adults

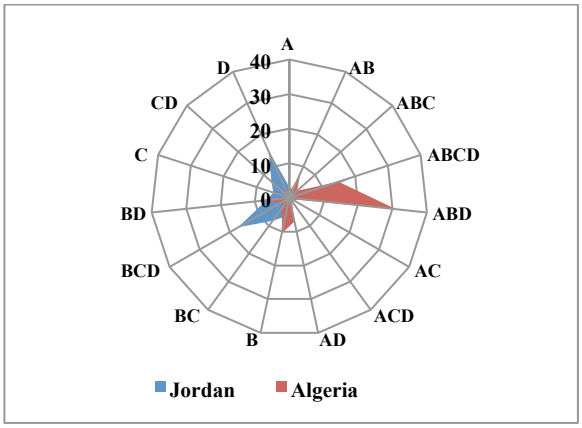


Figure (c): Male youth

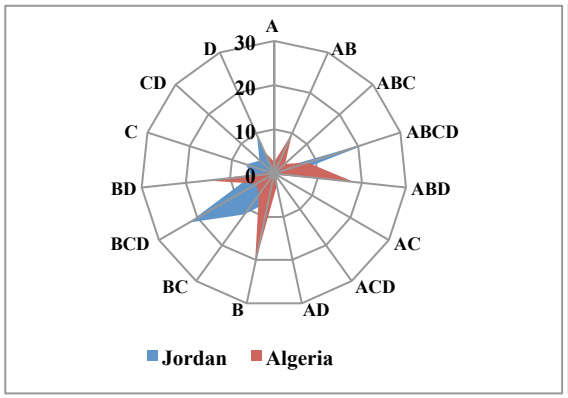


Figure (d): Female Youth

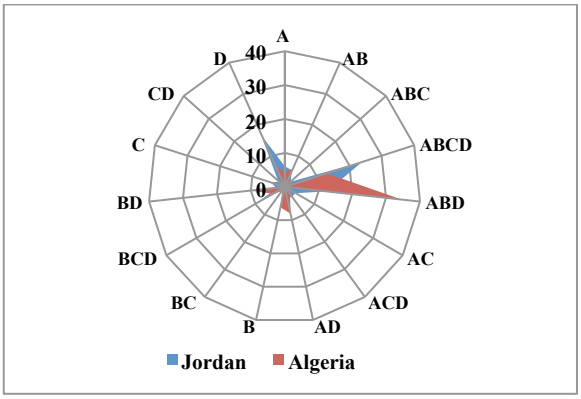


Figure (e): Male adults

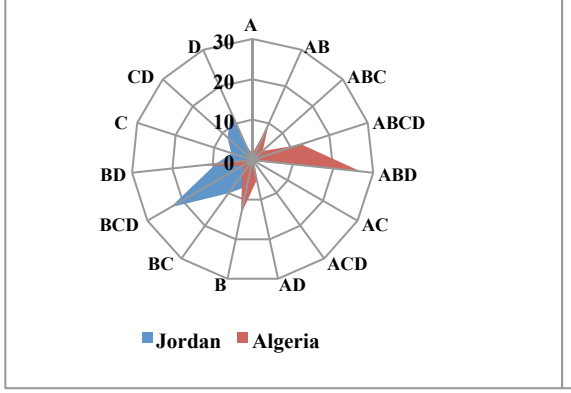
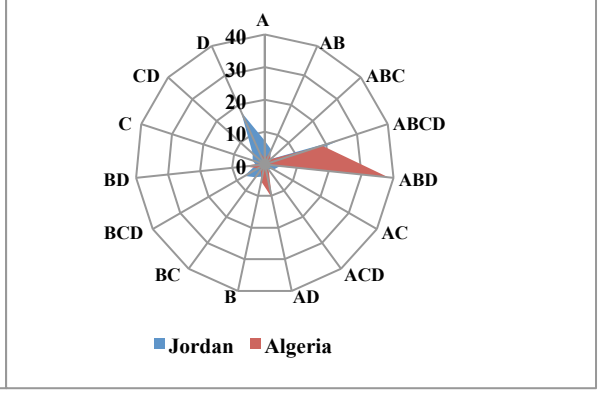


Figure (f): Female adults



A: Government employment offices, B: Asking at the work place, C: Friends and relatives, D: Others.
Source: Computed by the authors from the official labor force survey in Algeria 2010 (ONS) and the JLMPS 2010 for Jordan.

ANNEX II

Table 1: Definition of variables

Variables	Definition
Social network	
Density	Number of people per square kilometer by governorate
Density Squared	Density square
Demographic Characteristics	
Gender	dummy = 1 if female
Marital status	dummy = 1 if married
Age	Age of the individual
Age squared	Age of the individual squared
Human capital (ref university)	
Without education	dummy = 1 if without education
Primary	dummy = 1 if education level primary
Intermediate	dummy = 1 if education level Intermediate
Secondary	dummy = 1 if education level Secondary
Vocational training	dummy = 1 if the person has followed vocational training
Year of entry to labor force (ref :before 1996)	
[2006 -2010]	dummy = 1 if the employee was recruited between 2006 and 2010
[2001 -2005]	dummy = 1 if the employee was recruited between 2001 and 2005
[1996 -2000]	dummy = 1 if the employee was recruited between 1996 and 2000
Work experience	Dummy = 1 if the person has worked in the past
Job characteristics	
Legal sector (ref : public)	dummy = 1 if private sector
Affiliation to the social security (ref : affiliated)	dummy = 1 if the employee is not affiliated at the social security fund
Looking for another job(ref : non)	dummy = 1 if the employee is not seeking for another job
Hourly Wage	Hourly wage
Primary job require any skill	Dummy = 1 if job require skill
Economic activity (ref :services sector))	
Industry	dummy = 1 if industry sector
Construction	dummy = 1 if construction sector
Trade	dummy = 1 if trade sector
Agriculture	dummy = 1 if services sector
Firm size (ref 250 or more)	
0 to 4 workers	dummy = 1 if establishment size is between 0 and 4 employees
5 to 9 workers	dummy = 1 if establishment size is between 5 and 9 employees
10 to 49 workers	dummy = 1 if establishment size is between 10 and 49 employees
50 to 249 workers	dummy = 1 if establishment size is between 50 and 249 employees
Nationality (ref: others)	Dummy = 1 if Jordanian
Household Characteristics	
Household wealth	Composite index of household assets
Children under 5 years	Number of children under 5 years in the household
Number of people 5 – 14 years	Number of children aged between 5 and 14 years in the household
Number of employed in the household	the respondent is not recognized if it is in this status
Number of unemployed in the household	the respondent is not recognized if it is in this status
Characteristic of the area	
Geographic areas (ref: North)	
Middle	dummy = 1 if Middle governorate
South	dummy = 1 if South governorate
Local unemployment rate	percentage of unemployed in the workforce at the district of residence
Urbanization rate by governorate	percentage of population living in urban areas by governorate

ANNEX III

Table 1: Determinants of Job Search Intensity – Selection [Unemployment vs employment]

	Algeria		Jordan	
	Total	**Youth**	**Total**	**Youth**
Demographic characteristics				
Gender (Ref: Female)	0.00489	0.00870	0.495***	0.536***
Male	(0.0615)	(0.104)	(0.115)	(0.149)
Age				
25-34 years	0.371***	-	0.00891	-
	(0.0519)		(0.103)	
35 and more years	0.362***	-	0.359	-
	(0.0897)		(0.304)	
Human Capital (Ref: University)				
Without instruction	-0.878***	-0.952***	-1.183***	-1.004**
	(0.185)	(0.349)	(0.291)	(0.393)
Primary	-0.748***	-0.700***	-0.702***	-0.733***
	(0.0881)	(0.143)	(0.128)	(0.167)
Intermediate	-0.611***	-0.606***	-0.313**	-0.367*
	(0.0704)	(0.118)	(0.154)	(0.205)
Secondary	-0.468***	-0.472***	0.00221	0.00631
	(0.0712)	(0.126)	(0.152)	(0.214)
Experience				
Work experience (Ref: No)	-0.144***	-0.137	-0.199*	-0.217
Yes	(0.0507)	(0.0838)	(0.110)	(0.151)
Household Characteristics				
Household wealth	0.0881***	0.0913***	0.115***	0.111**
	(0.0182)	(0.0280)	(0.0341)	(0.0446)
Number of unemployed in the household	-0.0595*	-0.0220	0.208***	0.187**
	(0.0311)	(0.0487)	(0.0637)	(0.0795)
Characteristics of area				
Region (Ref: North)				
Middle (Hauts Plateaux)	-0.322***	-0.187**	0.174	0.252
	(0.0533)	(0.0794)	(0.117)	(0.154)
South	0.120*	0.375***	0.234	0.319
	(0.0728)	(0.104)	(0.164)	(0.208)
Urbanization rate	-0.00489***	-0.00797***	0.00559*	0.00732*
	(0.00144)	(0.00218)	(0.00310)	(0.00407)
Unemployment rate at district level	-1.310***	-1.588***	-1.822*	-2.674**
	(0.305)	(0.471)	(0.987)	(1.203)
Selection equation				
Density	-0.0406***	-0.0461***	-0.127**	-0.118*
	(0.00924)	(0.0158)	(0.0501)	(0.0710)
Density square	0.000981***	0.00113***	0.000221**	0.000189
	(0.000245)	(0.000425)	(0.000109)	(0.000157)
Age	-0.0942***	-	-0.105	-
	(0.00874)		(0.0647)	
Age square	0.000877***	-	0.000580	-
	(0.000122)		(0.00124)	
Marital status (Ref: Others)	1.030***	1.247***	-0.748***	-0.757***
Married	(0.0474)	(0.235)	(0.0941)	(0.167)
Number of employed in the household	-0.562***	-0.594***	-0.611***	-0.544***
	(0.0143)	(0.0231)	(0.0307)	(0.0382)
Without instruction	-0.550***	-0.698***	0.247	0.00338
	(0.0812)	(0.215)	(0.181)	(0.283)
Primary	-0.324***	-0.454***	-0.125	-0.318***
	(0.0486)	(0.0959)	(0.0814)	(0.120)
Intermediate	-0.383***	-0.549***	-0.237**	-0.518***
	(0.0420)	(0.0830)	(0.103)	(0.152)
Secondary	-0.415***	-0.646***	-0.0537	-0.359**
	(0.0448)	(0.0919)	(0.106)	(0.168)
Vocational training (Ref:No)	0.128***	0.164***	0.182**	0.265**
	(0.0332)	(0.0545)	(0.0798)	(0.112)
Number of people 5 – 14 years in the household	-0.0215	-0.0449**	0.0336	0.0290
	(0.0141)	(0.0227)	(0.0262)	(0.0335)
1.sexe	-0.433***	-0.419***	-0.935***	-0.776***
	(0.0401)	(0.0759)	(0.0830)	(0.122)
Children under 5 years in the household	0.241***	0.303***	0.0691	0.0911
	(0.0455)	(0.108)	(0.0645)	(0.121)
Gnder#c.Number of children under 5 years in the household	-0.191***	-0.150	-0.118*	-0.0937
	(0.0490)	(0.116)	(0.0695)	(0.134)
Constant	1.835***	0.208	3.456***	1.421***
	(0.176)	(0.250)	(0.849)	(0.146)
/cut1	-1.683***	-1.808***	-0.439**	-0.470**
	(0.126)	(0.194)	(0.356)	(0.459)
/cut2	-0.697***	-0.835***	0.410**	0.289*
	(0.124)	(0.191)	(0.357)	(0.461)
/cut3	0.518***	0.363**	1.217***	1.145**
	(0.124)	(0.191)	(0.359)	(0.466)
/athrho	-0.0570	-0.0546	-0.0128	-0.124
	(0.0453)	(0.0747)	(0.0847)	(0.126)
Sample size	**23629**	**4710**	**3879**	**1433**

Source: Computed by the authors from the official labor force survey in Algeria 2010 and the JLMPS 2010 for Jordan.

ANNEX IV

Table 1: Determinants of getting a job through relatives and friends -Selection [Employment vs Unemployment]

	Algeria		Jordan	
	Total	**Youth**	**Total**	**Youth**
Density	0.0467***	0.0215	0.00988	0.00926
	(0.00950)	(0.0224)	(0.0533)	(0.0876)
Density square	-0.00103***	-0.000505	-4.18e-05	6.84e-05
	(0.000245)	(0.000580)	(0.000116)	(0.000189)
Demographic characteristics				
Gender (Ref: Female)	0.0898**	-0.00987	0.173*	-0.320
Male	(0.0457)	(0.115)	(0.0979)	(0.216)
Age				
25-34 years	0.0500	-	0.210**	-
	(0.0443)		(0.0849)	
35 and more years	0.138**	-	0.361**	-
	(0.0670)		(0.154)	
Human Capital (Ref: University)				
Without instruction	0.839***	0.423*	0.588***	0.432
	(0.0561)	(0.256)	(0.202)	(0.393)
Primary	0.656***	0.191	0.718***	0.616***
	(0.0481)	(0.149)	(0.0875)	(0.233)
Intermediate	0.688***	0.258*	0.694***	0.448*
	(0.0429)	(0.136)	(0.0961)	(0.260)
Secondary	0.439***	0.201	0.268**	0.124
	(0.0435)	(0.144)	(0.106)	(0.256)
Year of entry to labor force (ref :before 1996				
[2006 -2010]	0.156***	0.677*	0.157	5.632
	(0.0468)	(0.365)	(0.116)	(703.2)
[2001 -2005]	0.0952**	0.669*	0.0445	5.658
	(0.0438)	(0.367)	(0.0967)	(703.2)
[1996 -2000]	0.137***	0.865**	-0.0174	5.215
	(0.0387)	(0.382)	(0.0908)	(703.2)
Job characteristics				
Economic activity (ref:services)				
Agriculture	0.214***	0.163	0.331	0.244
	(0.0527)	(0.111)	(0.223)	(0.316)
Industry	0.215***	0.0219	0.127	0.122
	(0.0367)	(0.101)	(0.0863)	(0.146)
Construction	0.0894**	-0.0683	0.209	0.723**
	(0.0378)	(0.0859)	(0.189)	(0.290)
Trade	0.337***	0.0621	0.227**	0.266*
	(0.0488)	(0.100)	(0.0999)	(0.160)
Affiliation to Social security (Ref:Yes)	-0.193***	-0.188*	-0.392***	-0.426***
No	(0.0382)	(0.0959)	(0.0799)	(0.131)
Legal sector (Ref: Public)	-0.791***	-1.407***	-0.252***	-0.150
Private	(0.0396)	(0.137)	(0.0791)	(0.148)
Household Characteristics				
Household wealth	0.0601***	0.162***	0.0262**	0.000121
	(0.0115)	(0.0277)	(0.0111)	(0.0179)
Characteristics of area				
Region (Ref: North)				
Middle (Hauts Plateaux)	0.133***	0.144**	-0.295***	-0.458***
	(0.0327)	(0.0724)	(0.0766)	(0.137)
South	0.500***	0.769***	-0.226*	-0.455**
	(0.0463)	(0.114)	(0.117)	(0.207)
Unemployment rate at district level	-0.918***	-1.196***	0.0254	0.643
	(0.157)	(0.366)	(0.745)	(1.393)
Constant	-0.875***	-0.620	-1.020***	-5.591
	(0.126)	(0.458)	(0.237)	(703.2)
Selection equation				
Age	0.100***	-	0.180***	-
	(0.00799)		(0.0602)	
Age square	-0.000965***	-	-0.00194*	-
	(0.000111)		(0.00116)	
Marital status (Ref: Others)	-0.570***	-0.823***	0.169*	0.222
Married	(0.0417)	(0.209)	(0.0906)	(0.157)
Primary	0.0688	0.0742	0.428**	0.347
	(0.0596)	(0.177)	(0.169)	(0.273)
Intermediate	0.166***	0.139	0.485***	0.512*
	(0.0578)	(0.172)	(0.180)	(0.290)
Secondary	0.308***	0.315*	0.426**	0.463
	(0.0603)	(0.177)	(0.186)	(0.305)
University	0.137**	-0.0397	0.359**	0.0190
	(0.0614)	(0.183)	(0.175)	(0.289)
Vocational training (Ref:No)	0.0197	0.00730	-0.105	-0.186*
	(0.0300)	(0.0492)	(0.0733)	(0.102)
Number of unemployed in the household	-0.259***	-0.317***	-0.220***	-0.258***
	(0.0198)	(0.0359)	(0.0414)	(0.0581)
Number of employed in the household	0.0727***	0.109***	0.0692***	0.0494
	(0.0106)	(0.0186)	(0.0244)	(0.0360)
Number of people 5 – 14 years in the household	0.00973	0.00258	-0.0151	-0.0478
	(0.0123)	(0.0201)	(0.0247)	(0.0315)
1.sexe	-0.464***	-0.497***	0.770***	0.683***
	(0.0354)	(0.0681)	(0.0748)	(0.114)
Children under 5 years in the household	-0.0474**	-0.0805**	0.00656	0.0304
	(0.0199)	(0.0382)	(0.0595)	(0.109)
Gnder#c.Number of children under 5 years in the household	-0.150***	-0.252**	0.0505	0.00614
	(0.0425)	(0.108)	(0.0644)	(0.122)
Constant	-0.920***	1.042***	-3.477***	-0.284
	(0.153)	(0.262)	(0.785)	(0.305)
Sample size	**17764**	**4067**	**3440**	**1307**

Source: Computed by the authors from the official labor force survey in Algeria 2010 and the JLMPS 2010 for Jordan.

ANNEX V

Table 1: Quality of models

	Search intensity		Social networks		Social Networks (extended model)	
	Test Wald	LR test of indep. Eqns. (rho = 0)	Test Wald	LR test of indep. Eqns. (rho = 0)	Test Wald	LR test of indep. Eqns. (rho = 0)
			Jordan			
Total	Chi2 (15) = 63.81 Prob > Chi2 = 0	Chi2(1)=8.43 Prob >chi2 = 0.0037	Chi2 (24) = 358.76 Prob > Chi2 = 0	Chi2(1)=9.33 Prob >chi2 = 0.0021	Chi2 (27) = 366.57 Prob > Chi2 = 0	Chi2(1)=7.22 Prob >chi2 = 0.0044
Youth	Chi2 (13) = 39.23 Prob > Chi2 = 0.0002	Chi2(1)=7.53 Prob >chi2 = 0,0002	Chi2 (22) = 139.45 Prob > Chi2 = 0	Chi2(1)=13,31 Prob >chi2 = 0	Chi2(25)=145.58 Prob >chi2 = 0	Chi2(1)=6.24 Prob >chi2 = 0.0067
			Algeria			
Total	Chi2 (15) = 405.40 Prob > Chi2 = 0	Chi2(1)=19.73 Prob >chi2 = 0	Chi2 (24) = 2939.45 Prob > Chi2 = 0	Chi2(1)=11,62 Prob >chi2 = 0	Chi2(29)=2990.06 Prob >chi2 = 0	Chi2(1)=14,71 Prob >chi2 = 0
Youth	Chi2 (13) = 169.65 Prob > Chi2 = 0	Chi2(1)=13.23 Prob >chi2 = 0.0003	Chi2 (22) = 542.62 Prob > Chi2 = 0	Chi2(1)=10,53 Prob >chi2 = 0	Chi2(26)=557.71 Prob >chi2 = 0	Chi2(1)=9.87 Prob >chi2 = 0

Figure 1: Predicted Probability of Getting Job through Family Relationship

Figure (a): Algeria – Total

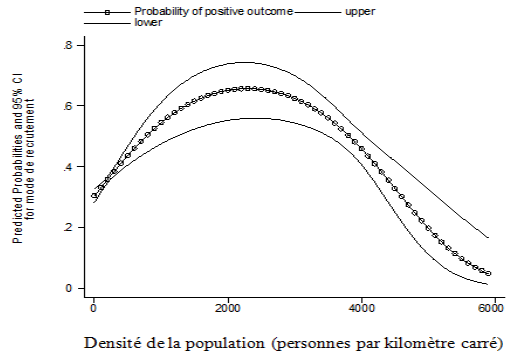


Figure (b): Algeria – Youth

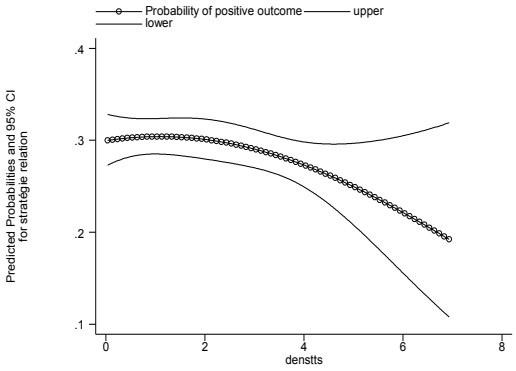


Figure (c): Jordan – Total

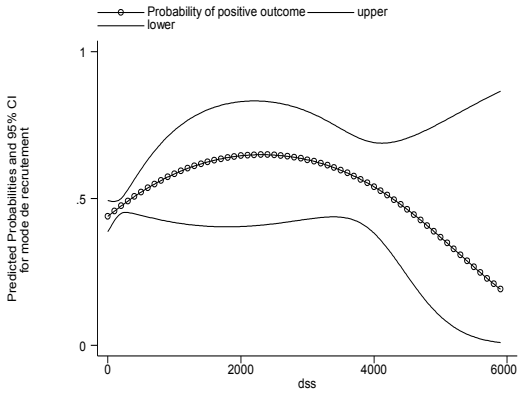
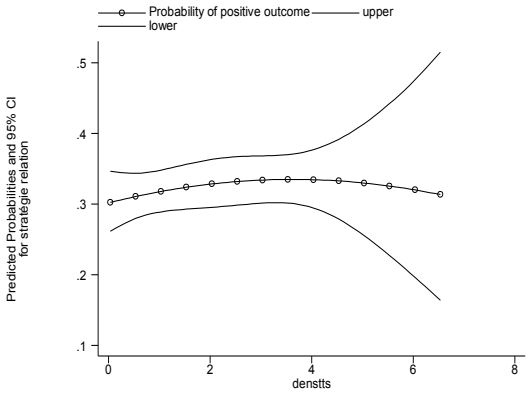


Figure (d): Jordan – Youth



Source: Computed by the authors from the official labor force survey in Algeria 2010 and the JLMPS 2010 for Jordan.