



# WORKING PAPER

## 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 Algeria and Jordan, this paper shows that social networks are crucial in labour market intermediation in Arab countries. We make use of binary and ordered probit regressions, corrected for sample selection using the 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 only be appropriate for the studies of minorities and immigrants. We propose that strong ties (closer friends and relatives, and maybe 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 job search is more intensive in Jordan compared to Algeria. Among others, household wealth, the local unemployment rate, region, previous labour 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 of finding 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 also shows that despite the importance of public sector agencies in the job search process, less than 5% in Algeria and 9% in Jordan of the young employed state that such agencies have helped them transit into employment.

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

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## 1. Introduction

Socioeconomic instability that recently erupted in many Arab countries has emphasised the vulnerability and fragility of their labour markets, which are characterised by high overall and youth unemployment rates. Better understanding of job matching and labour market intermediation can enhance labour market policy making, particularly in terms of selecting effective instruments of youth employment. Utilising relatives, neighbours, friends and 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% of jobseekers in Algeria and 60% in Jordan report that they use social networks when searching for employment. This phenomenon extends to advanced economies as well. In the USA, for example, social contacts are the main channel of finding jobs for between 30% to 60% of those currently employed (Ioannides and Loury, 2004). Social networking, as a less costly method, can enhance information transmission in the labour market and, in effect, improve the match between workers and firms (Munshi, 2003). The available literature on the role of social networks and their effectiveness in the labour market is multifaceted and exists mainly in developed countries (Lassassi and Muller 2013), however, 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 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 attention on the studies conducted in Arab countries. Labour market 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.

### 1.1 An overview of the literature

The available literature pertaining to the role of personal contact networks in mediating employment opportunities has been largely conducted in advanced labour markets, using economic, sociological and psychological models<sup>1</sup>. In Arab countries, similar to other developing countries, this area has attracted few studies. In this

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<sup>1</sup> For an extensive survey of economic studies see Jackson (2011).

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

In addition to highlighting their importance in job-search, labour economists have studied the potential influences of social networks, as an informal information mechanism, on the probability of finding jobs, of gaining more job offers, and of earning higher wages. The available studies have utilised 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 the potential influences of social ties on wages earned subsequently (Marmaros and Sacerdote, 2002; Berardi, 2013). Most recently, Dang (2015) utilises an IV approach in estimating the effect of social networks on the 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 the 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 at special occasions), Dang (2015).

## 1.2 Literature in Arab countries

As mentioned earlier, the role of social networks in labour market dynamics has attracted comparatively little attention in developing countries. This section is devoted to reviewing studies conducted in the Arab region. In his attempt to compare the effects of informal and formal institutions on labour market dynamics in Egypt, using in-depth interviews, Assaad (1993) shows that hiring workers in construction activities, particularly craft workers, depends partly on personal ties and social networks. The study also indicates that long-lasting family 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 of the role of kinship ties and social networks in segmented labour 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 in determining the rationing process.

By extending a model developed earlier by Calvo-Armengol and Zenou (2005), Zenou and Wahba (2005) offer evidence of 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 uses both formal and informal channels. The empirical results they show closely match the theoretical expectations of their model. In general, the study first indicates that the probability of finding 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) analyse 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 labour dynamics in Algeria, Morocco and Tunisia. Primarily, the paper is concerned with showing how social networks influence the probability of finding a job and identifying the characteristics of employers that are most likely to utilise 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 modelled the proportion of workers hired through social networks in companies, using a Heckman specification to allow for selection problems. Most importantly, among others, Lassassi and Muller (2013) show the following results:

1. A high proportion of job seekers, regardless of gender and age, utilise 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. Between 2003 and 2007, around 40% of all workers identify that they obtained their jobs through personal or family relationships. This pattern tends to increase slightly for men during this period, while social networks are found to contribute less and less in helping women transit into employment.
3. The overall role of government employment offices in job search is large, specifically ANEM, 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 currently employed, particularly amongst male workers. Over time, employed females, nevertheless, appear to have increased their reliance on this channel for job finding. Those women reporting that they were recruited through the government employment office increased more than twofold; from nearly 7% in 2003 to 16% in 2007. .
4. Searching for and finding a job through friends and relatives is reported to be more concentrated among youths (15-24) and workers living in rural areas. The same patterns apply for the 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. Analysing 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.

### 1.3 Labour 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 service 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 be similar in that recent economic growth is not sufficient to sustainably generate enough jobs (Furceri, 2012; Taghdisi-Rad, 2012). Although they have weathered the storm of the 'Arab Spring', Algeria and Jordan still suffer persistently from several problems encountering their labour markets.

To some extent, Jordanian and Algerian labour markets share common stylised 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), the private sector in the Arab economies lacks 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, favours certain social groups for political motives. The size of the informal sector ranges around 46 % in Algeria and 44% in Jordan (IMF, 2013; UNDP, 2013), making decent quality jobs more difficult to come by. Unemployment, which is more severe among females and the young, 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 the young and females into labour markets (MOL, 2011; Musette, Lassassi and Meziani, 2014). Despite these efforts, youth and female unemployment rates have remained in 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 share of 15 to 24 year-olds 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% for Algeria against 35% for Jordan). The latter two indicators suggest that youth unemployment, particularly in Jordan, may remain high in the medium term 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 the skills demanded in the labour market are considered key driving forces of youth unemployment in both countries.

Searching for long term employment is the norm for a significant proportion of unemployed workers, particularly in Algeria. Furceri (2012) points out that nearly 50% of the unemployed in Algeria spend more than two years seeking a job, suggesting labour market imperfections, particularly rigidity, explain this phenomenon. Table (1) shows that long-term unemployment (i.e. unemployment spells of more than 12 months) in Algeria affected 72.2% of the unemployed in 2015 (74% and 67.6% for males and females, respectively). On the other hand, in Jordan in 2014, it amounts to almost 38 %; 34.4% and 46.3%, for females and males respectively. This divergence between the countries may be partly attributed to differences in labour market rigidity. In this context, the Labour Act in Jordan has

been modified systematically over the last two decades, attempting to restructure the labour market and to curb the prevailing rigidity. This includes the introduction of short-term and flexible employment contracts. However, according to Table (1) Algeria outperforms 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.

It should also be mentioned that the Syrian crisis has complicated the performance of the economy and labour market in Jordan. It is estimated that more than one million Syrian refugees have entered the country since 2011. While thousands of well-educated Jordanians have graduated through the education system, hundreds of thousands of Syrian and other Arab and Asian workers occupy a significant proportion of the jobs created inside the economy, of which the majority are low skilled (MOL, 2104).

### 1.3.1 Labour market intermediation: The role of governments in Algeria and Jordan

Algeria and Jordan have implemented several active policies to influence the performance of their labour markets. A variety of initiatives to strengthen job information networks were carried out, with the aim of improving labour mobility, enhancing job matching and shortening the job search process and filling vacancies. Recently, particularly since the 'Arab Spring', more funds and concentrated efforts have been devoted to youth employment 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 labour market information. ANEM has different functions and schemes directed towards different target groups, primarily the young unemployed. By law, private companies and municipalities must inform ANEM about any job vacancies they have, besides the number of jobs they have recently created. Non-compliance results in employers being fined and penalised. Currently, this agency attempts to vocationally integrate the young unemployed into the labour market through promising schemes, in co-operation with private firms. Among others, for instance, it tries to match the young unemployed with available jobs through subsidised work contracts, irrespective of the person'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 Labour licensed private employment agencies to get involved in improving the employability of Algerians. Several private Internet employment networks are also available.

Since 2006, the Department of Employment and Training (DET), an autonomous agency supervised by the Ministry of Labour (MOL), has performed a labour market intermediation function in Jordan (Angel-Urdinola *et al.*, 2012). It also has responsibility for authorising and supervising private employment agencies, which amounted to 73 companies in 2016. Practically, DET and its branches in various governorates, require private employers to report their employment needs and, simultaneously, to 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: the National Employment Campaigns (NECs) and the National Electronic Employment System (NEES). NECs are organized by (MOL) every year and gather employers and job seekers to interact face-to-face. The MOL launched NEES and interconnected it to several municipalities and civil society organisations, to facilitate the process of obtaining information on labour market and job opportunities. The NEES website provides diverse methods of job search for both national employers and workers<sup>2</sup>. In addition, this system gathers and distributes information on job opportunities available to Jordanians in regional labour 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 also includes independent public institutions, such as the universities and municipalities. Most university and college graduates are accustomed to applying to CSB to queue for a job in the public sector. According to the MOL, (2011) the number of queuing applicants who passed CSB's exams amounted to 218,000 in 2011.

The Ministry of Labour in Jordan currently offers several training and employment programmes to help overcome the current mismatch between job seekers and employers in the private sector. For instance, special schemes target recent medical sciences graduates, by supporting their training in private hospitals for 12 months. Similar programmes devote funds to 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 the MENA region is not satisfactory and largely underdeveloped. The role of the government in labour market intermediation is constrained by a number of obstacles, including a lack of proper funding, training, and 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:** Labour market indicators in Algeria and Jordan

	Algeria (2015)			Jordan (2014)		
	Male	Female	Total	Male	Female	Total
Population ( <b>10<sup>3</sup></b> )	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
Labour force participation rate (%)	66.8	16.4	41.8	60	12.6	36.4
Labour 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

<sup>2</sup> See <http://www.nees.jo/Home.aspx>.

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 labour force survey - Algeria 2015 (ONS) – Jordan 2014 (DoS) Employment and unemployment survey.\*Excluding Syrian refugees and foreign workers.

#### 1.4 Methodology and Data considerations

In this paper, the descriptive and multivariate analyses primarily rely on Algerian and Jordanian micro data obtained from nationally representative labour market surveys. The first wave of the Jordan Labour Market Panel Survey is the source of our Jordanian data. It is a large scale survey offering very detailed data on a wide range of labour market aspects and covering 5102 households. It was conducted in 2007 by the Department of Statistics. In the context of Algerian data, we use the Labour Force Survey carried out in 2010, which encompassed 14592 households and was administered by the National Statistical Office.

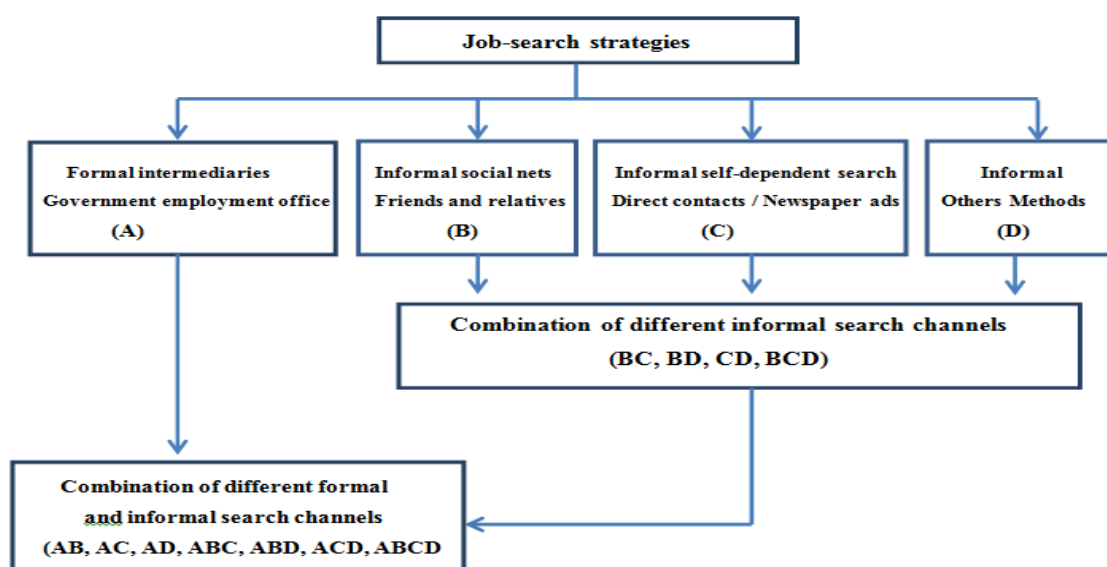
Both surveys have useful, and to some degree, comparable job search and find questions. Workers are asked to report the main method of job search used to find their current jobs. To the question *How did you find this job?* Algerian workers can choose one answer from a list of seven alternatives: Answering 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, the Jordan Labour Market Panel Survey asks a worker 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 to Ministry of Labour offices, applying to the Civil Service Bureau, internet sites, using land lines and cell phones, waiting at a workers' gathering place, seeking a private project, seeking private project finance, through family, and others. In this paper, we only take into account the first choice. To harmonise 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 workplace, 4) Government employment office, 5) Other methods.

Similar answers were possible for questions asking for methods through which currently unemployed job seekers are looking for jobs. However, unlike the employed, unemployed individuals could choose more than one answer. For Algeria, they could choose from four options: registration with a labour office, asking at the workplace, personal relationships, and other methods. The Jordan Labour Market Panel Survey uses the same choices provided above for Jordanian employed, excluding the last two options (others and through family). Similarly, to make our



analysis in both countries comparable, we harmonise the data by grouping jobseekers' answers into four categories: 1) Government employment offices, 2) Asking at the workplace, 3) Friends and relatives, 4) Other methods. In effect, three types of search strategies are possible for someone unemployed (see Figure 1). An individual can choose to utilise a single channel in the search for a job, whether formal or informal. Alternatively, a search strategy may combine two or more informal methods. Finally, the 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.

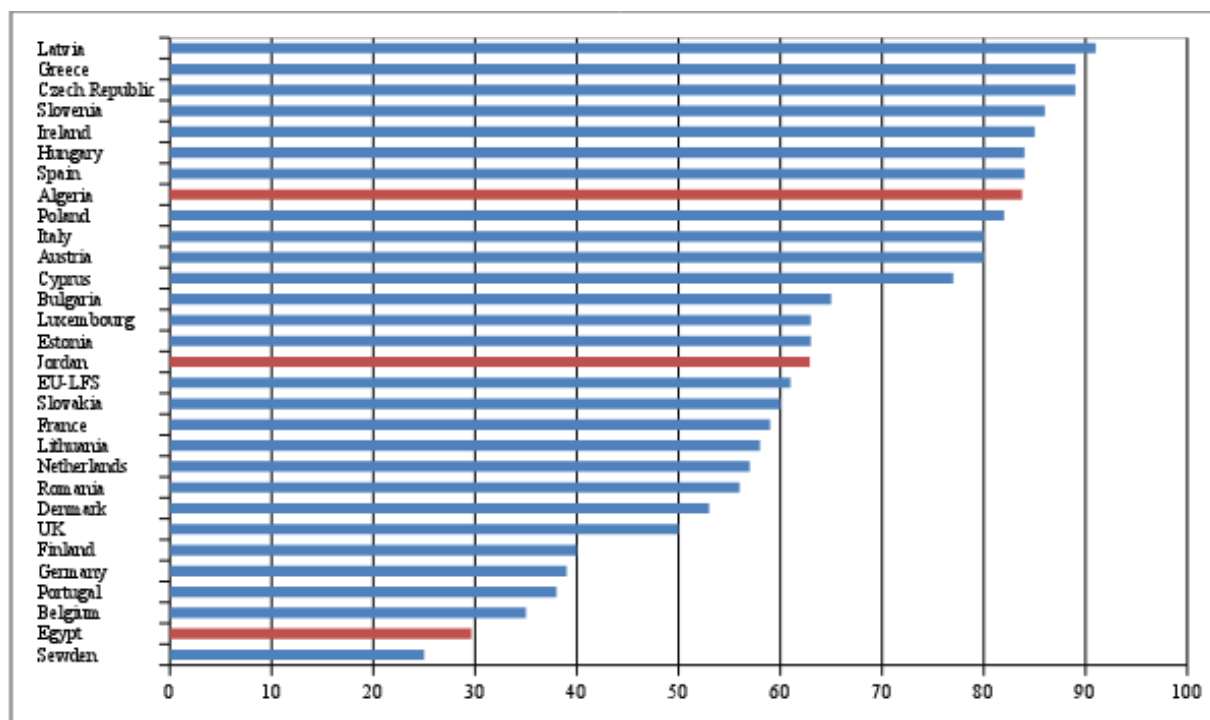
#### 1.4.1 Methods of estimation

For the purpose of this study, in addition to descriptive statistics, we estimate a number of probit models of job search and find, focusing the attention on the young. Firstly, the analysis handles determinants of search intensity by means of an ordered probit model. To detect and statistically correct any potential sample selection bias, we utilise a Heckman model. In the literature, there are different methods of measuring job-search efforts. Among others, Barron and Mellow (1979) utilise 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 and the 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 for 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 analyse the determinants of the probability of an individual finding a job through personal or family relationships, using a 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 allow 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).

### 1.5 Descriptive analysis

Social networks potentially augment the efficiency of the labour market and serve as an information transmission device that helps the labour market in job matching and in minimising search frictions. Job-search statistics, see Figure 2, demonstrate that extensive utilisation 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 labour markets, including relatives and friends, tends to be more effective in ironing out labour market frictions and imbalances. The youth unemployment rate in OECD countries in 2015, (<https://data.oecd.org>) for example, averages 13.9% (13.4% and 14.3% for young 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 analyses 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 conducive to obtaining a job. Furthermore, the analysis involves some reflections on differences, by gender and age group, in the intensity of job search in both countries.

### 1.5.1 Job search methods and intensity

Table (2) summarises responses of currently unemployed people on whether they have utilised one or more job-search methods. In Figure (3), their responses are used to construct an indicative measure of intensity, which facilitates 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<sup>3</sup>. 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 group (i.e. youth and adults) and gender. Whereas the "*Government employment offices*" method is common among female job seekers, it tends to be considerably less popular than using friends and relatives among the youth unemployed 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 young female job-seekers in Jordan use this informal method, in comparison to nearly 72% of their male counterparts. In the case of Algeria, such indicators are also in favour 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 job seekers in Algeria, see Table (1), exceeds one year, or even two years, as reported by Furceri (2012), who suggests labour market rigidity as a driving force of this phenomenon. However, this does not necessarily mean that the labour market in Jordan matches jobs and jobseekers more efficiently, as such patterns may also practically reflect differences in participation, 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).

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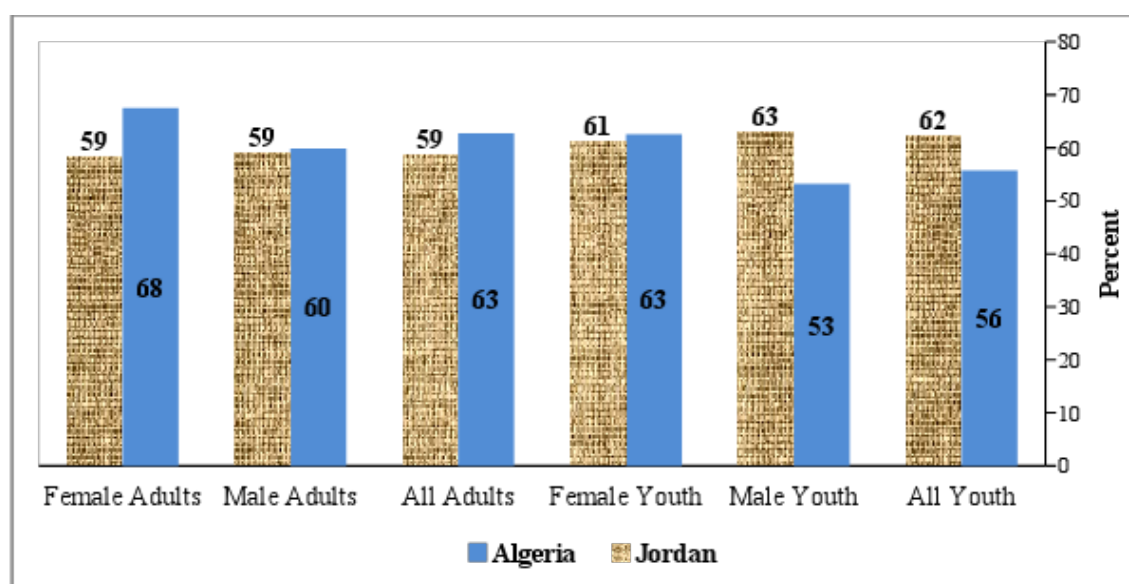
<sup>3</sup> For a broader view on the distributions of job-search strategies utilised by youths and adults, for both countries and by gender see annex1.

**Table 2:** Search methods used by job seekers

	Algeria (2010)			Jordan (2010)		
	Total	Male	Female	Total	Male	Female
<b>Youth (15-24)</b>						
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
<b>Friends and relatives</b>	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
<b>Adults (25-59)</b>						
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
<b>Friends and relatives</b>	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 Labour Force Survey in Algeria 2010 and the Jordan Labour Market Panel Survey 2010.

**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 the young Jordanian unemployed have greater job-search intensity, because our intensity measure among them amounts to 62%, compared to 56% in Algeria. This pattern appears to result from the considerable difference prevailing between males in both countries, as male job-seekers in Jordan seem to search more intensively than their Algerian counterparts

(63% vs. 53%). The opposite occurs when one compares female unemployed looking for employment in the two countries, with a smaller difference (63% vs. 61%). Moreover, our analysis of intensity shows that Algerian adults put more effort into job search compared to their counterparts in Jordan, particularly in the case of females. Over generations, we observe conflicting patterns in both countries. In Jordan, unlike Algeria, job intensity is found to increase when one contrasts between the young and adults, as the former's intensity is greater than the latter's by around 3%. Interestingly, in the context of Algerian youth and adult job seekers, females emerge as more active in search processes than males, with a percentage points difference in intensity ranging between 8% and 10%. In Jordan, in line with other statistics characterising the situation of females in the labour market, unemployed women search for a job less intensively, compared to 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 the unemployed in Jordan use other methods. In comparison, less than 31% of Algerian job seekers report that they have utilised 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 many other methods<sup>4</sup>.

***To what extent does the use of friends and relatives help someone unemployed find employment?***

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

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. On average, between a quarter and a half of all adult and youth respondents state that they became employed by relying largely on friends and relatives. Although the significance of social networks in job finding for Jordanian women is substantial and has risen, comparing young and adult females, such channels play less important roles than directly contacting employers and applying through public sector agencies. This result also holds true in the case of Algerian adult females, who identify that

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<sup>4</sup> According to our data, insignificant differences exist between young and adult jobseekers in using the Internet. Such a finding is possibly due to that fact that internet-based job finding and matching services have not received enough attention in the region.

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 behind using friends and relatives, for youths and adults correspondingly. However, the effectiveness of this method tends to show improvement, as its percentage contribution increased generationally (almost 20% for the young against 14.5% for adults).

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

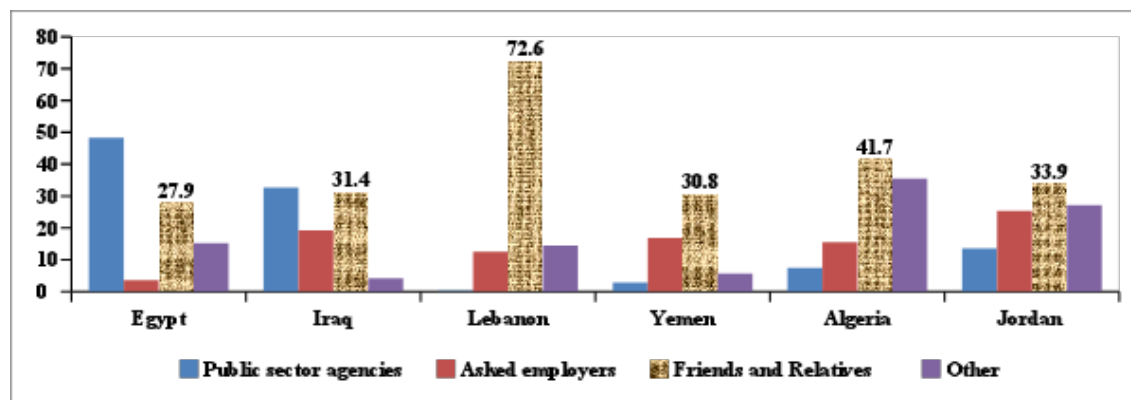
	Algeria (2010)			Jordan (2010)		
	Total	Male	Female	Total	Male	Female
<b>Youth (15-24)</b>						
Newspaper ads	4.5	4.1	7.4	14.7	15.4	10.3
<b>Friends and relatives</b>	<b>51.5</b>	<b>53.4</b>	<b>35.5</b>	<b>39.4</b>	<b>40.6</b>	<b>31.7</b>
Asking at the work place	20	20.6	15	30.3	29.2	37.2
Government employment office	4.5	2.9	17.5	9	7.8	16.5
Others	19.5	19	24.6	6.6	7	4.3
<b>Adults (25-59)</b>						
Newspaper ads	9.2	9	10.2	11.3	12.5	6.5
<b>Friends and relatives</b>	<b>39.5</b>	<b>42.2</b>	<b>24.7</b>	<b>33</b>	<b>35.2</b>	<b>26.3</b>
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 labour force survey in Algeria 2010 and the Jordan Labour Market Panel Survey 2010.

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. Relying on friends and relatives is, on average, responsible for about 52% and 39% of all hiring in terms of the 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 true 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 in Egypt and to some extent Iraq, it is evident that social networks are the main method in such a process, with their 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).

## 1.6 Estimation results

### 1.6.1 Determinants of Search Intensity

The number of methods used in job search by the 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 participating in the labour market<sup>5</sup>. Gender, experience before losing the job, household characteristics (wealth, number of unemployed and employed in a household) and characteristics of the area (region, urbanisation rate, and local unemployment rate) are used as covariates<sup>6</sup>. Age and level of education are also included. 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 the 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.

$$y_j = \sum_{h=1}^H v_h 1(k_{h-1} < x_j \beta + u_{1j} \leq k_h) \dots [1]$$

<sup>5</sup> 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.

<sup>6</sup> See annex 2 for the description of variables.

**The ordinal outcome equation is:**

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

$$S_j = 1 (z_j \gamma + u_{2j} > 0) \dots [2]$$

**The selection equation is:**

Where  $S_j = 1$  if we observed  $y_i$  and 0 otherwise,  $z_j$  is the covariates used to model the selection process,  $\gamma$  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<sup>7</sup>.

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% significance level in the estimated models. On the contrary, the ordered probit models produce a different situation in Jordan, as the effects of several variables are found to be 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 job seekers 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 only statistically significant for those aged 35 and above, who typically represent an insignificant proportion of the unemployed. These patterns are possibly attributable to differences 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 them being more optimistic about finding jobs more quickly. Adult Algerian unemployed tend to intensify their job searching, as they are more likely to have spent a longer time searching for jobs, with the expectations of obtaining jobs faster. Long-term unemployment rates in Jordan are much lower than those prevailing in Algeria. Jordanian female jobseekers are at a greater risk of long-term unemployment in comparison with males.

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<sup>7</sup> See Table 1 – annex 5.



The observed effects for the *household wealth* index are apparently consistent in both countries. These patterns also remain significant when we only consider youth jobseekers. Household wealth exerts a positive impact on the probability of greater search intensity. Wealthy families are more capable of securing funds, means and time for their unemployed members to become more actively involved in looking for jobs. In the context of Arab culture, those who are unemployed and belonging to wealthy households may also look for jobs more intensely due to their strong and long-lasting familial links with firms, which can allow the unemployed to rapidly obtain more information on job vacancies and make contact easier 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 from 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 favour a single job search method or may transit towards 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 previous experience of unemployment amongst men has repercussions on their future behaviour in the labour market. The overall coefficients of *previous work experience* variables 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 effort to searching for a job. However, the effect of this variable is only significant at the 10% level and insignificant when we run the analysis on youth samples in Algeria and Jordan, respectively. Most of the young have short periods of experience compared to adults. One possible explanation is that the unemployed with longer previous experience probably know the most effective methods of finding a job and, therefore, they use specific methods. A second explanation is that these people are less motivated to seek employment and, hence, their job search efforts are 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 utilise several search methods compared to the less educated. In Jordan, significant negative coefficients, at the 10% level, are only observed 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 to enter the labour market, which forces them to make a greater effort 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 make more effort to search for a job than the less educated.

Unemployed in Jordan, particularly the young, living in areas closer to the capital (in the middle part of the country, compared to the north and south regions) have a greater tendency to use more channels for job search. Similar results are observed for Algeria, for the central areas compared with the north, which include the capital city of Algeria, for both the whole sample and the young. Capital cities and their surrounding areas are typically characterised by more employment

opportunities, which may encourage the youth unemployed to intensify their job search. This strongly applies for Jordan, where most of the population lives in the middle of the country, 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 greater job search intensity. 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 within 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 southern regions revolted, denouncing their marginalization. Of the twelve private intermediation agencies, no agency is located in the southern regions. The latter may also explain why people in the south rely more on themselves when looking for jobs. Regional differences are important in terms of employment policy. Equity for labour 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 urbanisation rates into the analysis produces mixed effects that are also extremely small in magnitude,

Among the interesting results are those describing the effects of numbers of employed and unemployed in a household. While the number of employed does not exert significant impact on both labour markets, the existence of an additional unemployed person in Jordanian households raises the probability of more intensive searching. The existence of several unemployed in a family living in Jordan imposes further pressure on its resources and may fuel the process of job search for the unemployed. Schmitt and Wadsworth (1993) found similar results for men who were unemployed in Great Britain in the 1980s. However, in Algeria this effect is overall weak and negative, and insignificant in the case of youth job seekers. On the whole, differences between the two countries in income and expenditure obligations facing families may need clarification of this finding. Average income levels are lower in Jordan and, due to fiscal constraints, the government has partly and sometimes completely eliminated subsidies of many commodities and services, most importantly for 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 labour force and age. On the other hand, a convex relationship between population density (calculated at the governorate level) and the probability of participation in the labour 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 person's level of education, 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 labour 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 labour market in the MENA region does not offer the best conditions for working 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 labour 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 in 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 suggests 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.

**Table 4: Determinants of Job Search Intensity**

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

Rho	-.2951774	-.4284041	-.496731	-.2553208
	.0613116	.0992467	.1397554	.3134382
<b>Sample size</b>	<b>38691</b>	<b>14089</b>	<b>3066</b>	<b>1361</b>

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

**Source:** Computed by the authors from the official labour force survey in Algeria 2010 and the Jordan Labour Market Panel Survey 2010.

### 1.6.2 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 the employed themselves. To delve more deeply into the role of social networks in finding jobs, probit models with selection are run on the employed samples<sup>8</sup>. In both models reported in Table 5 below, we corrected selectivity by estimating the probability of an individual being employed<sup>9</sup>. The dependent variable is binary taking a value of one, if social networks are the main method of obtaining a job and zero otherwise. In Table 5 (Model 1) the estimation incorporates the same explanatory variables for the two countries for the whole sample and for the young. Table 5 (Model 2) repeats the same estimation, using additional variables available only for one of the two countries. The data we use enables us to allow for different variables at individual, household and regional 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 labour force, job characteristics, household characteristics and characteristics of the 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 an underlying relationship exists

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

#### **Latent equation**

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

#### **Probit equation**

The dependent variable for observation j is observed if:

<sup>8</sup> 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.

<sup>9</sup> 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.

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

### **Selection equation**

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

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 youth samples.

Looking at the results, *population density* as a measure of the size and strength of social contacts shows a small positive effect in the probability of finding a job, and only for the 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)<sup>10</sup>. In areas where the population density is higher, relational networks become ineffective for people seeking a job, because the sharing of information about job vacancies is more extensive than in less dense areas. In the case of Egypt, 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 Jordan, this effect is insignificant. In the context of the young in both countries, a greater size of social network does not improve the probability of employment through friends and families. This means that networks approximated by local population density do 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 similarly 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 who, therefore, have arguably better social contacts. Those 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 the 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 young in Jordan. This would suggest that the effectiveness of the network is also related to social background, as represented by assets owned 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 by counting on social ties,

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<sup>10</sup> See annex 5, For Predicted Probability of Getting Job through Family Relationship.

compared to non-Jordanian workers. This might reach the same conclusions as arrived at in the literature pertaining to the importance of kinship ties among foreign workers and immigrants in labour markets.

### 1.7 Additional results

A number of interesting aspects emerge from Table 5. In both countries, using social contacts does not appear to improve the chances of individuals obtaining 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 requiring any skill (for Jordan only). The analysis confirms that those utilising social ties and contacts are more likely to obtain less secured private jobs in smaller size firms. Such search methods also tend to match the unemployed with jobs in certain economic activities traditionally associated with higher risk of informality. This effect is at a maximum in construction activities in Jordan and trade activities in Algeria. Using the Jordanian data, our results are not supportive of 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 a means of finding a job improves with *age*. This may imply that as workers age, they might accumulate more contacts or become more efficient in utilising information coming from friends and relatives. Concerning levels of education, the estimates indicate that those holding a secondary education and less are more likely to find a job through social ties and contacts. This pattern tends to be more acute among the young in both countries. The inverse effect of education has been emphasised by the literature (for Arab countries, see Zenou and Wahba, 2005).

Finally, and importantly, the probability of obtaining employment through social contacts appears to be significantly influenced by short-term conditions prevailing in labour markets. To investigate this possibility, our models divide employed respondents, according to the year of their entry to the labour market. Specifically for Algeria, the likelihood of getting employed through social networks varies significantly from one period to another. This result may be largely driven by fluctuations in business cycles in the short run. In Jordan, the positive effects of this variable turn out to be significant only at the 10% level for the whole sample in one of our models, and only for those who have entered the labour 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 hit the world economy during that period. In such an environment, job seekers may find it more difficult to find a job through formal channels 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
<b>Density</b>	0.0448*** (0.00938)	0.0277 (0.0222)	0.0104 (0.0537)	0.00747 (0.0921)	0.0437*** (0.00946)	0.0227 (0.0226)	0.0158 (0.0538)	0.0226 (0.0929)
<b>Density</b>	-0.000991*** (0.000242)	-0.000699 (0.000576)	-4.39e-05 (0.000117)	7.78e-05 (0.000198)	-0.000943*** (0.000243)	-0.000554 (0.000586)	-5.44e-05 (0.000117)	6.10e-05 (0.000199)
<b>Demographic characteristics</b>								
Gender (Ref: Female)								
Male	0.151** (0.0679)	-0.0876 (0.170)	0.105 (0.156)	0.0125 (0.395)	0.173** (0.0683)	0.00916 (0.174)	0.102 (0.159)	0.00941 (0.402)
Age								
25-34 years	0.0716 (0.0437)	-	0.172** (0.0765)	-	0.0699 (0.0439)	-	0.166** (0.0768)	-
35 and more years	0.179*** (0.0557)	-	0.314** (0.147)	-	0.165*** (0.0562)	-	0.311** (0.147)	-
<b>Human Capital (Ref: University)</b>								
Without instruction	0.805*** (0.0615)	0.458* (0.255)	0.636*** (0.212)	0.354 (0.471)	0.801*** (0.0615)	0.518** (0.257)	0.596*** (0.214)	0.401 (0.478)
Primary	0.652*** (0.0494)	0.133 (0.177)	0.733*** (0.0993)	0.674*** (0.237)	0.645*** (0.0495)	0.167 (0.179)	0.729*** (0.101)	0.689*** (0.243)
Intermediate	0.680*** (0.0429)	0.212 (0.150)	0.703*** (0.106)	0.536** (0.244)	0.675*** (0.0429)	0.245 (0.151)	0.670*** (0.107)	0.460* (0.249)
Secondary	0.439*** (0.0425)	0.245* (0.137)	0.269** (0.107)	0.250 (0.223)	0.440*** (0.0426)	0.283** (0.139)	0.271** (0.108)	0.276 (0.225)
<b>Year of entry to LF</b>								
[2006 -2007]	0.153*** (0.0444)	0.701* (0.376)	0.196* (0.110)	5.509 (283.9)	0.157*** (0.0445)	0.708* (0.377)	0.181 (0.110)	5.456 (283.2)
[2001 -2005]	0.106** (0.0427)	0.710* (0.377)	0.0670 (0.0950)	5.545 (283.9)	0.111*** (0.0428)	0.721* (0.379)	0.0630 (0.0951)	5.499 (283.2)
[1996 -2000]	0.136*** (0.0383)	0.897** (0.392)	-0.00794 (0.0912)	5.092 (283.9)	0.137*** (0.0384)	0.881** (0.393)	-0.0143 (0.0913)	5.001 (283.2)
<b>Job characteristics</b>								
<b>Economic activity (ref: services)</b>								
Agriculture	0.175*** (0.0515)	0.156 (0.110)	0.350 (0.226)	0.243 (0.336)	0.170*** (0.0520)	0.156 (0.112)	0.316 (0.230)	0.270 (0.356)
Industry	0.215*** (0.0366)	0.00998 (0.103)	0.129 (0.0869)	0.126 (0.154)	0.259*** (0.0374)	0.0486 (0.105)	0.149* (0.0883)	0.115 (0.157)
Construction	0.0828** (0.0374)	-0.0533 (0.0873)	0.211 (0.190)	0.764*** (0.295)	0.108*** (0.0380)	-0.0173 (0.0892)	0.209 (0.191)	0.721** (0.299)
Trade	0.335*** (0.0484)	0.0739 (0.101)	0.228** (0.101)	0.291* (0.166)	0.323*** (0.0490)	0.0306 (0.104)	0.229** (0.101)	0.292* (0.168)
Affiliation to Social security (Ref:No)	-0.183*** (0.0378)	-0.187* (0.0973)	-0.401*** (0.0795)	-0.443*** (0.131)	-0.0948** (0.0417)	-0.0221 (0.105)	-0.372*** (0.0808)	-0.398*** (0.134)
Yes								
Legal sector (Ref: Private)								
Public	-0.797*** (0.0394)	-1.455*** (0.125)	-0.256*** (0.0795)	-0.156 (0.155)	-0.714*** (0.0416)	-1.237*** (0.132)	-0.250*** (0.0807)	-0.128 (0.159)
<b>Size of enterprise (ref 250 or more)</b>								
0 to 4 workers	-	-	-	-	0.343*** (0.0498)	0.674*** (0.135)	-	-
5 to 9 workers	-	-	-	-	0.429*** (0.0522)	0.736*** (0.140)	-	-
10 to 49 workers	-	-	-	-	0.182*** (0.0410)	0.415*** (0.131)	-	-
50 to 249 workers	-	-	-	-	0.206*** (0.0383)	0.302** (0.126)	-	-
Looking for another job (Ref:No)	-	-	-	-	-0.0316 (0.0286)	-0.0819 (0.0622)	-	-
Yes								
Hourly Wage	-	-	-	-	-	-	-0.00522 (0.00429)	-0.00531 (0.00650)
Primary job require any skill (Ref: No)	-	-	-	-	-	-	-0.0982* (0.0585)	-0.0495 (0.107)
Yes								
Nationality (Ref: others)	-	-	-	-	-	-	-0.266** (0.121)	-0.488*** (0.187)
Jordanian								

Table 5 continues

	Model 1				Model 2			
	Algeria		Jordan		Algeria		Jordan	
	Total	Youth	Total	Youth	Total	Youth	Total	Youth
<b>Household Characteristics</b>								
Household wealth	0.0637*** (0.0114)	0.165*** (0.0275)	0.0259** (0.0112)	-7.66e-05 (0.0188)	0.0644*** (0.0114)	0.170*** (0.0279)	0.0332*** (0.0115)	0.00819 (0.0192)
Number of unemployed in the household	-0.0177 (0.0238)	-0.0519 (0.0587)	-0.0081 (0.0514)	-0.0620 (0.0871)	-0.0190 (0.0238)	-0.0550 (0.0594)	0.000211 (0.0515)	-0.0652 (0.0878)
<b>Characteristics of area Region (Ref: North)</b>								
Middle (Hauts Plateaux)	0.142*** (0.0326)	0.167** (0.0737)	-0.298*** (0.0770)	-0.486*** (0.137)	0.140*** (0.0328)	0.175** (0.0748)	-0.299*** (0.0773)	-0.481*** (0.138)
South	0.510*** (0.0461)	0.814*** (0.112)	-0.230* (0.118)	-0.484** (0.213)	0.497*** (0.0462)	0.786*** (0.113)	-0.213* (0.119)	-0.471** (0.215)
Unemployment rate at district level	-0.970*** (0.154)	-1.284*** (0.348)	0.0824 (0.758)	0.648 (1.501)	-0.895*** (0.156)	-1.106*** (0.355)	0.0206 (0.762)	0.552 (1.517)
Constant	-0.985*** (0.126)	-0.542 (0.543)	-0.904*** (0.239)	-6.072 (283.9)	-1.328*** (0.136)	-1.315** (0.576)	-0.645** (0.255)	-5.604 (283.2)
<b>Selection equation</b>								
Age	0.349*** (0.00464)	-	0.366*** (0.0556)	-	0.349*** (0.00464)	-	0.366*** (0.0556)	-
Age square	-0.00434*** (5.97e-05)	-	-0.00565*** (0.00105)	-	-0.00434*** (5.97e-05)	-	0.00566*** (0.00105)	-
<b>Marital status (Ref: Others)</b>								
Married	0.114*** (0.0275)	0.0857 (0.0915)	-0.559*** (0.0715)	-0.508*** (0.125)	0.115*** (0.0275)	0.0962 (0.0922)	-0.559*** (0.0715)	-0.506*** (0.125)
Without instruction	-0.820*** (0.0325)	0.200* (0.104)	-1.866*** (0.157)	-1.680*** (0.276)	-0.820*** (0.0325)	0.201* (0.104)	-1.865*** (0.157)	-1.678*** (0.276)
Primary	-0.490*** (0.0294)	0.847*** (0.0557)	-1.402*** (0.0747)	-1.191*** (0.127)	-0.490*** (0.0294)	0.848*** (0.0557)	-1.403*** (0.0747)	-1.192*** (0.127)
Intermediate	-0.318*** (0.0259)	0.455*** (0.0434)	-1.332*** (0.0882)	-1.072*** (0.151)	-0.318*** (0.0259)	0.455*** (0.0434)	-1.331*** (0.0882)	-1.070*** (0.151)
Secondary	-0.374*** (0.0277)	0.0234 (0.0471)	-0.410*** (0.0961)	0.0905 (0.187)	-0.374*** (0.0277)	0.0234 (0.0471)	-0.410*** (0.0961)	0.0909 (0.187)
Vocational training (Ref: No)	0.513*** (0.0230)	0.613*** (0.0362)	0.125* (0.0739)	0.142 (0.117)	0.513*** (0.0230)	0.613*** (0.0362)	0.122* (0.0740)	0.138 (0.118)
Number of people 5 – 14 years in the household	-0.0358*** (0.00792)	-0.0923*** (0.0133)	-0.0599*** (0.0216)	-0.0483 (0.0330)	-0.0357*** (0.00792)	-0.0919*** (0.0133)	-0.0599*** (0.0216)	-0.0479 (0.0330)
1.sexe	-2.002*** (0.0209)	-1.324*** (0.0352)	2.239*** (0.0710)	2.211*** (0.101)	-2.002*** (0.0209)	-1.324*** (0.0352)	2.238*** (0.0710)	2.208*** (0.101)
Children under 5 years in the household	0.152*** (0.0164)	-0.0443 (0.0271)	-0.183*** (0.0387)	-0.0786 (0.0750)	0.152*** (0.0164)	-0.0448* (0.0271)	-0.184*** (0.0387)	-0.0780 (0.0749)
Gnder#c.Number of children under 5 years in the household	-0.453*** (0.0254)	-0.222*** (0.0633)	0.499*** (0.0595)	0.187* (0.0997)	-0.453*** (0.0254)	-0.219*** (0.0633)	0.499*** (0.0595)	0.186* (0.0998)
Constant	-5.360*** (0.0920)	-0.833*** (0.101)	-5.024*** (0.734)	-0.0625 (0.113)	-5.361*** (0.0920)	-0.844*** (0.101)	-5.027*** (0.734)	-0.0630 (0.113)
<b>Sample size</b>	<b>46358</b>	<b>15740</b>	<b>5160</b>	<b>1852</b>	<b>46355</b>	<b>15739</b>	<b>5154</b>	<b>1847</b>

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

Source: Computed by the authors from the official labour force survey in Algeria 2010 and the Jordan Labour Market Panel Survey 2010.

## 1.8 Conclusions and key lessons

### 1.8.1 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 labour markets, particularly in Jordan and Algeria. It shows that labour market information and referrals obtained through friends and relatives emerge as increasingly crucial in job matching in both countries. Using data from nationally representative labour surveys, our results indicate that nearly 83% of Algerian and 64% of Jordanian job seekers, respectively, rely on friends and relatives. Female job seekers in both countries, particularly in Jordan, are less likely to use these informal channels compared to males, irrespective of age. While using the *Government employment offices* method to look for a job is common among female job seekers, it tends to be much less popular than using friends and relatives among the young unemployed 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 the unemployed find a job, they *comparatively* prove to be the most, or



among the most, effective job-search channels, as reported by employed themselves. On average, between a quarter and a half of all adult and youth respondents in both countries stated that they became employed by relying largely on friends and relatives.

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 to 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 finding 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, only has 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 youths and youths 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 the young. 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 the young in both countries, lead to less reliance on social contacts in attaining jobs. On the other hand, gender is only found to be significant 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 evidently appears to increase the probability of obtaining jobs characterised by poorer quality.

### 1.8.2 Key lessons

Policy makers must seek effective policy formulation processes that facilitate non-discriminatory employment. In general, national employment policies and strategies should take into account the impact of social networks on employment and labour 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 labour markets. The findings of the study also show that despite the

importance of public sector agencies in the job search process, less than 5% of the employed young in Algeria, and 9% in Jordan, 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 the Arab region is inadequate and largely underdeveloped. In effect, policy makers are advised to pay more attention to boosting the effectiveness of public agencies. The data shown in the current study provides suggestive evidence that society, and possibly private sector employers, favour males over female job seekers in using referrals from friends and relatives. Arab women have very low labour market participation and unemployment among young females is at a high level. 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 the number of labour 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 commonly use social networks, the effectiveness of this 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 amongst the young, is on average better in Jordan. This may partly mirror differences in labour market rigidity and differences in labour market reform. For example, Jordan's Labour Act permits short-term flexible contracts, leading arguably to the creation of more temporary employment. This, in turn, may fuel job search efforts. On the other hand, higher public spending on welfare and subsidies for 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 for goods and services, including health, education, housing, and fuel. In effect, this may have resulted in boosting 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 search intensity in Jordan, whereas its effect is seen as insignificant in Algeria.

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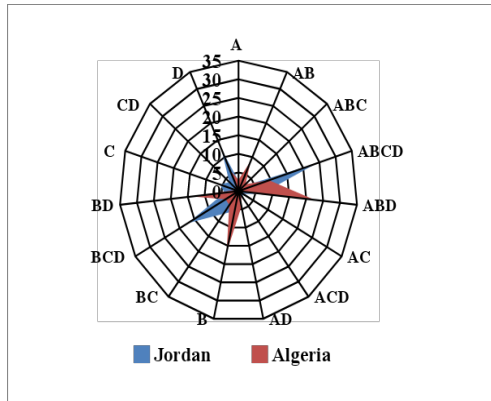
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### 3. Annexes

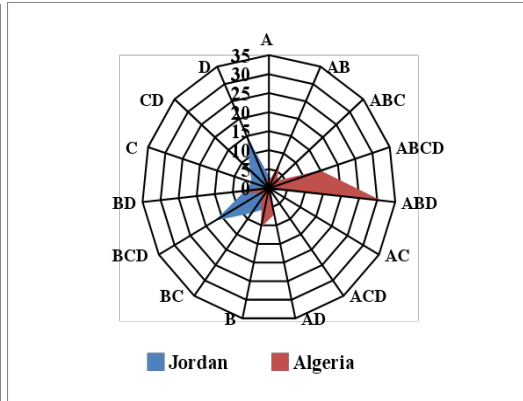
#### 3.1 Annex 1

**Figure 1:** Job search possible strategies facing an unemployed

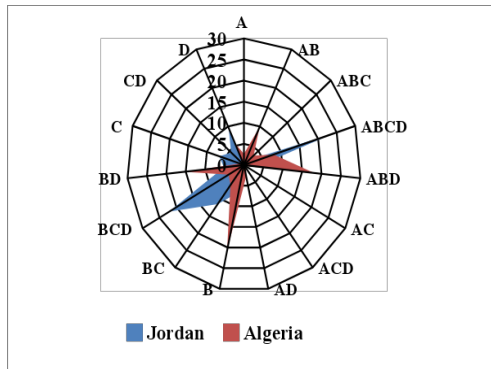
**Figure (a): Youth**



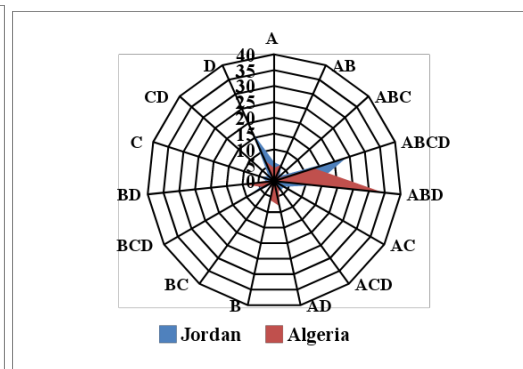
**Figure (b): Adults**



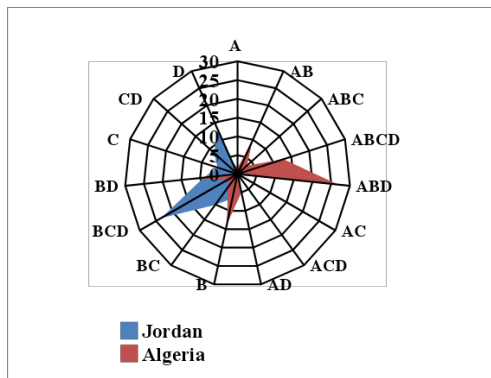
**Figure (c): Male youth**



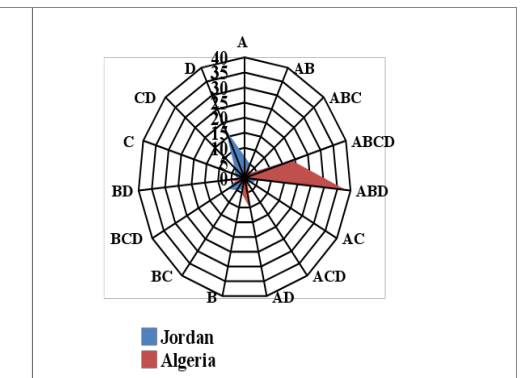
**Figure (d): Female Youth**



**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 labour force survey in Algeria 2010 and the Jordan Labour Market Panel Survey 2010.

3.2 Annex 2

**Table 1:** Definition of variables

<b>Variables</b>	<b>Definition</b>
<b>Social network</b>	
Density	Number of people per square kilometer by governorate
Density Squared	Density square
<b>Demographic Characteristics</b>	
Gender	dummy = 1 if female
Marital status	dummy = 1 if married
Age	Age of the individual
Age squared	Age of the individual squared
<b>Human capital</b> (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
Work experience	Dummy = 1 if the person has worked in the past
<b>Job characteristics</b>	
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
<b>Household Characteristics</b>	
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
<b>Characteristic of the area</b>	
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
Urbanisation rate by governorate	percentage of population living in urban areas by governorate

3.3 Annex 3

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

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



3.4 Annex 4

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

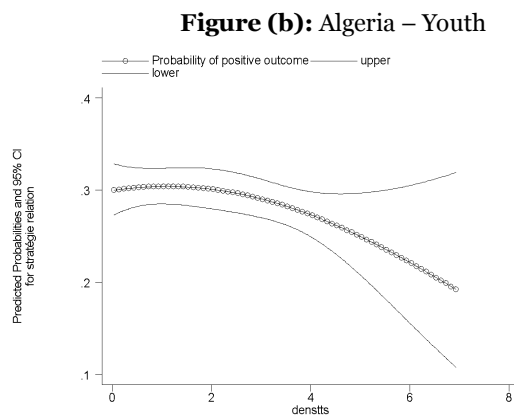
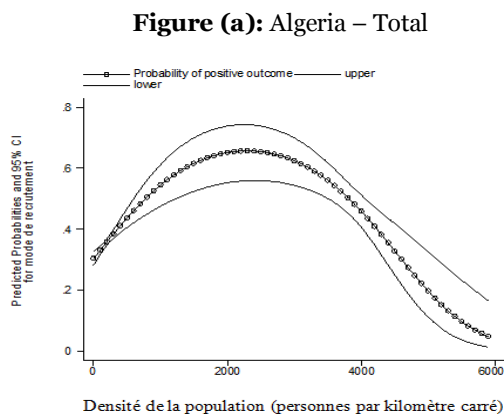
	Algeria		Jordan	
	Total	Youth	Total	Youth
<b>Density</b>	0.0467*** (0.00950)	0.0215 (0.0224)	0.00988 (0.0533)	0.00926 (0.0876)
<b>Density square</b>	-0.00103*** (0.000245)	-0.000505 (0.000580)	-4.18e-05 (0.000116)	6.84e-05 (0.000189)
<b>Demographic characteristics</b>				
Gender (Ref: Female)				
Male	0.0898** (0.0457)	-0.00987 (0.115)	0.173* (0.0979)	-0.320 (0.216)
Age				
25-34 years	0.0500 (0.0443)	-	0.210** (0.0849)	-
35 and more years	0.138** (0.0670)	-	0.361** (0.154)	-
<b>Human Capital (Ref: University)</b>				
Without instruction	0.839*** (0.0561)	0.423* (0.256)	0.588*** (0.202)	0.432 (0.393)
Primary	0.656*** (0.0481)	0.191 (0.149)	0.718*** (0.0875)	0.616*** (0.233)
Intermediate	0.688*** (0.0429)	0.258* (0.136)	0.694*** (0.0961)	0.448* (0.260)
Secondary	0.439*** (0.0435)	0.201 (0.144)	0.268** (0.106)	0.124 (0.256)
<b>Year of entry to labour force</b> (ref :before 1996 [2006 -2007])				
[2006 -2007]	0.156*** (0.0468)	0.677* (0.365)	0.157 (0.116)	5.632 (703.2)
[2001 -2005]	0.0952** (0.0438)	0.669* (0.367)	0.0445 (0.0967)	5.658 (703.2)
[1996 -2000]	0.137*** (0.0387)	0.865** (0.382)	-0.0174 (0.0908)	5.215 (703.2)
<b>Job characteristics</b>				
<b>Economic activity (ref:services)</b>				
Agriculture	0.214*** (0.0527)	0.163 (0.111)	0.331 (0.223)	0.244 (0.316)
Industry	0.215*** (0.0367)	0.0219 (0.101)	0.127 (0.0863)	0.122 (0.146)
Construction	0.0894** (0.0378)	-0.0683 (0.0859)	0.209 (0.189)	0.723** (0.290)
Trade	0.337*** (0.0488)	0.0621 (0.100)	0.227** (0.0999)	0.266* (0.160)
Affiliation to Social security (Ref:Yes)				
No	-0.193*** (0.0382)	-0.188* (0.0959)	-0.392*** (0.0799)	-0.426*** (0.131)
Legal sector (Ref: Public)	-0.791*** (0.0396)	-1.407*** (0.137)	-0.252*** (0.0791)	-0.150 (0.148)
<b>Household Characteristics</b>				
Household wealth	0.0601*** (0.0115)	0.162*** (0.0277)	0.0262** (0.0111)	0.000121 (0.0179)
<b>Characteristics of area</b>				
<b>Region (Ref: North)</b>				
Middle (Hauts Plateaux)	0.133*** (0.0327)	0.144** (0.0724)	-0.295*** (0.0766)	-0.458*** (0.137)
South	0.500*** (0.0463)	0.769*** (0.114)	-0.226* (0.117)	-0.455** (0.207)
Unemployment rate at district level	-0.918*** (0.157)	-1.196*** (0.366)	0.0254 (0.745)	0.643 (1.393)
Constant	-0.875*** (0.126)	-0.620 (0.458)	-1.020*** (0.237)	-5.591 (703.2)
<b>Selection equation</b>				
Age	0.100*** (0.00799)	-	0.180*** (0.0602)	-
Age square	-0.000965*** (0.000111)	-	-0.00194* (0.00116)	-
Marital status (Ref: Others)				
Married	-0.570*** (0.0417)	-0.823*** (0.209)	0.169* (0.0906)	0.222 (0.157)
Primary	0.0688 (0.0596)	0.0742 (0.177)	0.428** (0.169)	0.347 (0.273)
Intermediate	0.166*** (0.0578)	0.139 (0.172)	0.485*** (0.180)	0.512* (0.290)
Secondary	0.308*** (0.0603)	0.315* (0.177)	0.426** (0.186)	0.463 (0.305)
University	0.137** (0.0614)	-0.0397 (0.183)	0.359** (0.175)	0.0190 (0.289)
Vocational training (Ref:No)	0.0197 (0.0300)	0.00730 (0.0492)	-0.105 (0.0733)	-0.186* (0.102)
Number of unemployed in the household	-0.250** (0.0198)	-0.317** (0.0359)	-0.220*** (0.0414)	-0.258*** (0.0581)
Number of employed in the household	0.0727*** (0.0106)	0.109*** (0.0186)	0.0692*** (0.0244)	0.0494 (0.0360)
Number of people 5 – 14 years in the household	0.00973 (0.0123)	0.00258 (0.0201)	-0.0151 (0.0247)	-0.0478 (0.0315)
1. sexe	-0.464*** (0.0354)	-0.497*** (0.0681)	0.770*** (0.0748)	0.683*** (0.114)
Children under 5 years in the household	-0.0474** (0.0199)	-0.0805** (0.0382)	0.00656 (0.0595)	0.0304 (0.109)
Gnder#c.Number of children under 5 years in the household	-0.150*** (0.0425)	-0.252** (0.108)	0.0505 (0.0644)	0.00614 (0.122)
Constant	-0.920*** (0.153)	1.042*** (0.262)	-3.477*** (0.785)	-0.284 (0.305)
<b>Sample size</b>	<b>17764</b>	<b>4067</b>	<b>3440</b>	<b>1307</b>

3.5 Annex 5

**Table 1:** Quality of models

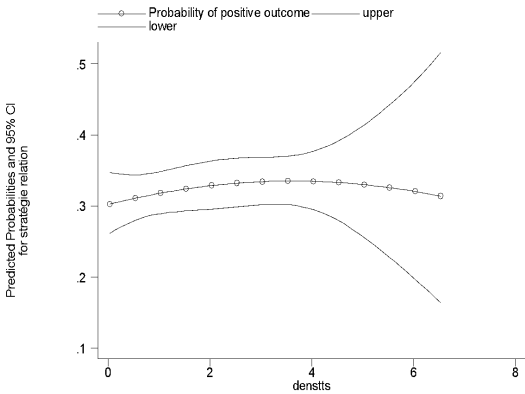
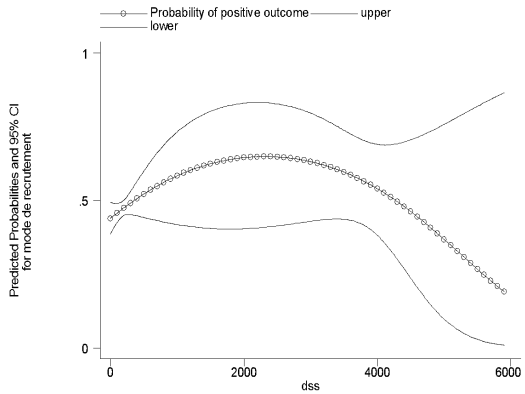
	Search intensity		Social networks		Social Networks (extended model)	
	Test Wald	LR test of indep. Eqns. (rho = 0)	Test Wald	LR test of indep. Eqns. (rho = 0)	Test Wald	LR test of indep. Eqns. (rho = 0)
<b>Jordan</b>						
<b>Total</b>	Chi2 (15) = 63.81 Prob > Chi2 = 0	Chi2(1)=8.43 Prob >chi2 = 0.0037	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
<b>Youth</b>	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
<b>Algeria</b>						
<b>Total</b>	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
<b>Youth</b>	Chi2 (13) = 169.65 Prob > Chi2 = 0	Chi2(1)=13.23 Prob >chi2 = 0.0003	Chi2 (22) = 542.62 Prob > Chi2 = 0	Chi2(1)=10,5 3 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 (c):** Jordan – Total

**Figure (d):** Jordan – Youth





## About EMNES

The Euro-Mediterranean Network for Economic Studies (EMNES) is a network of partners and associates research institutions and think tanks working on the Mediterranean region. EMNES aims to provide a renewed vision for socio-economic development in the Mediterranean region, mainly focusing on employment creation, social inclusion, and sustainable development.

EMNES areas of research include the role of institutions and institutional reforms, macro-economic policies, private sector and micro, small and medium sized enterprises and employment creation, role of education, innovation, skill mismatch and migration, finance, regulation and the real economy and regional integration.

EMNES will produce books, studies, scientific and policy papers and will disseminate through the organisation of annual conferences, and workshop meetings in the region bringing together leading senior and junior researchers, academics, policy makers and representatives of civil society to discuss and debate optimal policies for the future of the region.

EMNES is built on four core principles: independence, excellence, policy relevance and deep knowledge on Euro-Mediterranean affairs.

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