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Skills mismatch and returns to education in Jordan

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Abstract

Education is an investment and its returns, in terms of increased wages, can be used as an indicator of productivity in an economy. Also, skills utilisation is important for productivity and whenever there is a misalignment between the skills demanded and those available, it is spoken of as skills mismatch. This paper provides an overview on skills mismatch and estimates gender differences in the returns to education in Jordan. The econometric analysis is hereby based on the estimation of fixed effects' models on a set of pseudo panel data, covering the period between 2000 and 2015. The findings reveal that returns to education for male employees are higher than for female employees (the wage premium from one additional year of schooling is 6.8% for males and 5.4% for females) and that, on average, females are paid 74% of what males earn. We explain this result based on some peculiarities of female participation in Jordan's labour market. Concerning skills mismatch, the analysis points to the existence of over-education and under-skilling.

Keywords: skills mismatch; returns to education; gender wage differential; Jordan

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1. Introduction

Human capital is widely recognised as among the factors that foster economic growth and promote economic development. Skills and education are the building blocks of human capital and reflect in economic growth (Barro, 1991) as they increase productivity and, hence, wages. Thus, education is an investment, for both individuals and their societies. For an individual, it should reflect, ceteris paribus, in better employability and a higher wage.

This is the core idea underlying the huge amount of literature attempting to estimate the net benefits from education, i.e. the returns from investment into it. Contributions have adopted both a macro and a microeconomic perspective: while macroeconomic studies have been mostly concerned with assessing the externalities of education and the link between education and economic growth (e.g., Schultz, 2004, Weir & Knight, 2004, and de la Croix & Licandro, 1999), microeconomic approaches have essentially calculated the rate of returns to education (Mincer, 1974; Card, 1999 and 2001).

A related aspect, which has profound implications on labour market outcomes and on the productivity of a country, is skills mismatch. Skills mismatch is a broad concept, encompassing various types of imbalance between the skills offered and skills needed by the labour market (International Labor Organization, 2014).

The present study aims at deepening the link between education, earnings, and skills mismatch. The education premium model relies on the framework of the Mincer equation (Mincer, 1974). We test this model on a set of panel data developed from the Employment Surveys of the Department of Statistics of Jordan from 2000 to 2015.

Jordan is characterised by a good level of education. Nevertheless, unemployment among graduates is high and labour market participation rates are low, particularly among females. This makes Jordan an interesting case of study to measure the returns to education. Furthermore, the comparison of returns to education amongst male and female workers should also contribute towards a better understanding of female participation rates.

One of the most common types of skills mismatch is the imbalance between education and the type of skills required on the job. This type of mismatch can be classified as over or under-education and the discussion about it, in relation to the Jordanian labour market, provides some interesting conclusions and encourages certain policy recommendations. The extent to which education and skills are successfully matched with those required on the job, is an essential element that contributes to shaping labour market outcomes, economic growth, productivity and competitiveness (ILO, 2014).

We, thus, believe that the estimation of returns to education and the analysis of the skills mismatch are very important in characterising the country's labour market and understanding some of its dynamics, as well as to better contextualising the demand for education.

The study is articulated as follows: Section 2 presents a critical overview of the literature on returns to education, wage differentials, and skills mismatch. Section 3 reviews some of the main features of Jordan concerning educational levels and labour market characteristics, including unemployment and skills mismatch. The empirical analysis is then discussed through the presentation of the theoretical framework and the econometric model for the

estimation of returns to education (Section 4). Section 5 explains data specification and Section 6 the estimation techniques and main results. Section 7 concludes the paper.

2. Skills mismatch and returns to education

Skills mismatch comprehends various types of imbalance between the skills offered and skills needed by the labour market (International Labor Organization, 2014).

Skills mismatch signals the non optimal utilisation of human capital, as it generates cost for an economy and its stakeholders. In particular, it reflects in lower wages and lower job satisfaction for workers (for overqualified), and in increased risk of being out of employment (for underqualified). For employers, skills mismatch is associated with low productivity and, in general, for a society, as it implies non optimal investment into education and a suboptimal productivity level.

There are actually different types of skills mismatch and, thus, different measures to respectively categorise them: (1) vertical mismatch, which is usually measured in terms of over-education, under-education, over-skilling and under-skilling, (2) skill gaps, (3) skill shortages (usually measured in terms of unfilled and hard-to-fill vacancies), (4) horizontal mismatch, which is related to the field of study and (5) skill obsolescence (McGuinness et al., 2017).

An alternative classification of skill mismatches disentangles them into mismatches related to the level of the individual's circumstances and those related to firm level aggregates. In particular, individual concepts of mismatch can be measured as the degree to which workers' skills or education levels are in tune or not (i.e., whether they are above, below or poorly connected) with the skills required by the current occupation (Cedefop, 2010; Quintini 2011).

Firm level aggregates of skills mismatch mostly concern skill gaps and skill shortages. Skill gaps apply to situations where workers do not possess the adequate competencies to perform their job and skill shortages apply to cases where an employer is unable to fill a vacancy, due to the absence of suitable candidates (Mc Guinness et al., 2017).

The measurement of skills mismatch is a challenging task and, in general, there are two main approaches to it: skills mismatch can be elicited from direct information on workers' skill proficiency, via self reporting, see, for example, the School to Work Transition Survey by the ILO, or via assessment, as done by the PIAAC by OECD (European Commission, 2016). Alternatively, skills mismatch can be indirectly assessed considering the number of employees having a job requiring their education qualification as matched, and those having a job requiring a lower educational profile as unmatched.

The link between education and earnings has been deeply investigated in the literature and early contributions can be traced back to Friedman & Kuznets (1954). Without doubt, the debate has been dominated by the approach formulated by Mincer (1974): since then, despite critiques and, notwithstanding the formulation of alternative approaches, the most common way of estimating returns to education has been the OLS estimation of Mincer equation (Card, 1999 and 2001).

The theoretical foundation of Mincer's equation can be traced back to Becker's theories of rational households' decision making (Becker, 1964). In Becker's framework, wages are the remuneration for human capital and differences in wages can be explained by the heterogeneity of individuals. Thus, they reflect individual characteristics, such as ability, education, and experience. The decision to invest in education emerges as the optimal solution to the inter-temporal weighing of costs and benefits of education (Becker, 1964).

In its simplest form, Mincer assumes the logarithm of wages to be a function of education and experience. The model assumes constant and homogeneous returns from education (proxied by the years of schooling) and experience (age minus the number of years of schooling) (Mincer, 1974). The main variations of this basic model have essentially been motivated by relaxing one or more assumptions. Critiques and additions to Mincer equation can, thus, be classified into contributions pointing: (1) at the endogeneity of education, (2) at the non linearity of the education premium, and (3) at the heterogeneity of the experience premium.

First, Mincer equation posits education to be exogenous, even though education is likely to be influenced by skills and ability, which are heterogeneous characteristics of individuals. Endogeneity of schooling (Heckmann et al., 2003) and the so called "ability bias" (Harmon et al., 2003) have been taken into account, including proxies for natural ability (such as grades and IQ grades, see Harmon et al., 2007), as well as different instrumental variables (e.g., distance to school, spouses' and/ or parents' education, and early stage smoking, see Lall & Sakallariou, 2010).

The discussion on the relevance of endogeneity of schooling and on how to take it into account is longstanding and has been a concern of numerous researchers (e.g. Griliches, 1977; Willis & Rosen, 1979; Willis, 1986; Card, 1995 and 1999; Heckmann & Vylacil, 2003). The debate is still open and there are conflicting views about the subject.

Besides, several studies point to the fact that the relationship between wages and education is non linear per se, and its non linearity is not only due to the heterogeneity of skills (Belzil & Hansen, 2002; Belzil, 2006). Accepting this view means questioning the instrumental variables (IV) approach to education in general; the underlying problem of IV is that in the case of education, all IV variables turn out to be in some ways correlated to socioeconomic indicators (Heckmann & Urzua, 2009; Card, 1999), that are, again, related both to education choices and to wages.

A related line of analysis comes to the conclusion that endogeneity of skills does not matter much in the end, as there are so many types of abilities, some of which may even be negatively correlated to schooling (Angrist & Krueger, 1991).

The choice of control variables has been inspired by a vast literature investigating the importance of socioeconomic factors in determining wages. To provide some examples, Lam and Shoeni (1993) estimate that the single factor of having a father with a university degree leads to a 20% wage premium.

Studies comparing the returns to education of males and females provide consistent results that returns to education are higher among females (e.g., Dougherty, 2005; Trostel et al., 2002; Bakis et al., 2013). This finding relies on the common consideration of considering female educational attainment (in many countries lower than among males) and female participation rates.

The second line of critique to the original Mincer equation questions the assumption of linearity of returns to education. Despite some support for linearity (Card & Krueger, 1992), most of the studies corroborate the idea that premiums from education are convex (Mincer, 1997; Deschenes, 2001; Lemieux, 2003; Belzil, 2006). Convexity may be a result of the sheepskin effect. Non linearity of returns has been typically modeled regressing the coefficient for schooling squared (Heckmann et al., 1996; Lemieux, 2003; Diagne & Diene, 2001).

The third issue with regard to the Mincer's original model is heterogeneity of returns from experience. The assumption of constant returns from experience does not seem to hold, as different educational levels lead to different coefficients for experience (Heckmann et al., 2003) and provide different growth profiles of wages. This result has been backed by numerous studies (Belzil, 2006; Card & Lemieux, 2001; Andini, 2008).

In general, the type of data also matters for the model specification: as discussed by Heckmann, Lochner, and Todd (2003), the 1960s US Census data, used by Mincer for the original model specification, fitted the model's assumptions. However, the same assumptions are not always met by different datasets and it has been further demonstrated that returns to education crucially depend on the type of data used for estimation (among the studies finding differences between estimates based on cross sectional and cohort data, there are Murphy & Welch, 1992; Katz & Murphy, 1992; Katz & Autor, 1999).

Arbak (2012) estimates returns to education by including (but not specifically targeting) the case of Jordan (as part of the Southern Mediterranean countries) which demonstrated the returns to education to be lower in Jordan than in other countries of the region.

3. Education and the labour market in Jordan

The education sector in Jordan has witnessed remarkable development during the past two decades, as the demand for education is very high. To meet this demand, both public and numerous private schools and universities operate in the country. It can be estimated that, in 2016, around 26% of students were enrolled in private schools, most of which offer international curricula. Concerning certain indicators for the quality of education, in 2016, the average number of students per class was 25, with a ratio of 16 students to one teacher. In the same year, 19.4% of total population (approximately 1.9 million) was enrolled in basic and secondary stages of education (Data from DoS, Statistical Yearbook, 2017).

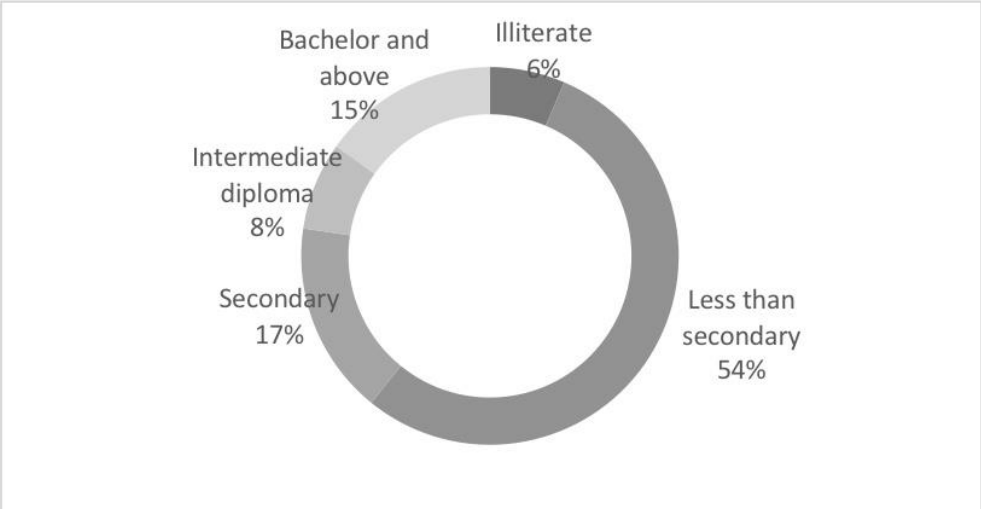
The number of higher education institutions has also increased as a result of the sustained demand for higher education that is mainly seen as a key to entering the labour market, whether in Jordan or abroad. According to the Ministry of Higher Education, there are 10 public and 18 private universities.

The latest Census for the year 2015 assesses population in Jordan to be 9.5 million inhabitants (37% of which are below 15 years of age). In general, almost 295,000 students are enrolled in higher education. Most higher education students (86%) are enrolled in bachelor programmes (277,000 students) and slightly more than half of bachelor students are females (52%).

The Employment and Unemployment Survey of 2015 by DoS estimates 40% of the Jordanian adult population have achieved secondary education or more (See

Figure **1**).

Figure 1: Jordanian adult population (15+) by educational level



Source: *DoS, Employment survey, 2015*

In 2015, the Jordanian labour force consisted of 1.61 million individuals, 1.32 million of which were males and about 289,000 females (Ministry of Labour of Jordan, 2016). Despite the high demand for education, the share of economically active population in Jordan is among the lowest worldwide (World Bank Data). According to a survey by the Jordan Department of Statistics, in 2016 the refined economic activity rate was around 36% (58.7% for males and 13.2% for females). Participation rate of females in the labour market is, thus, extremely low in Jordan and the gap between genders is sustained for all age groups.

In 2016, there were almost 1.4 million employed in Jordan, 84% of which were males and the remaining 16% females. The DoS survey for 2015 further reveals that, accordingly with their educational level, employed Jordanians are almost equally split between less than secondary education (50.8%) and above (48%) (Table 1). Specifically, around 26% of the employed Jordanian population has at least a bachelor degree.

Hereby, it should be noted that the share of employed women with a bachelor degree is more than double (58%) (See Table 1. Despite the fact that there are more females than males in universities, labour market participation of females is low, due to socio-cultural and religious considerations (Clark et al., 1991; Miles, 2002; Sidani, 2005; Sperings et al., 2009). A similar trend is observable across most Middle East and North African countries and is labelled as the MENA "gender equality paradox." (World Bank, 2013).

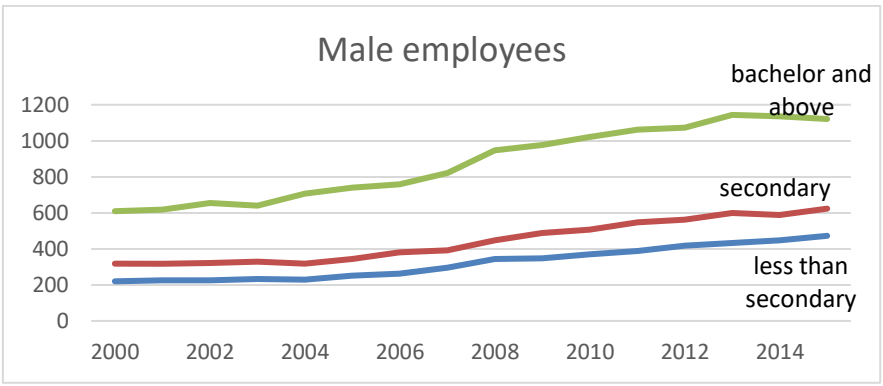
The development of average monthly wages (in US$) of male and female employees by educational level is presented in Figure 2. Besides the clear gap in favour of male employees, the graph points towards smaller education premiums among females.

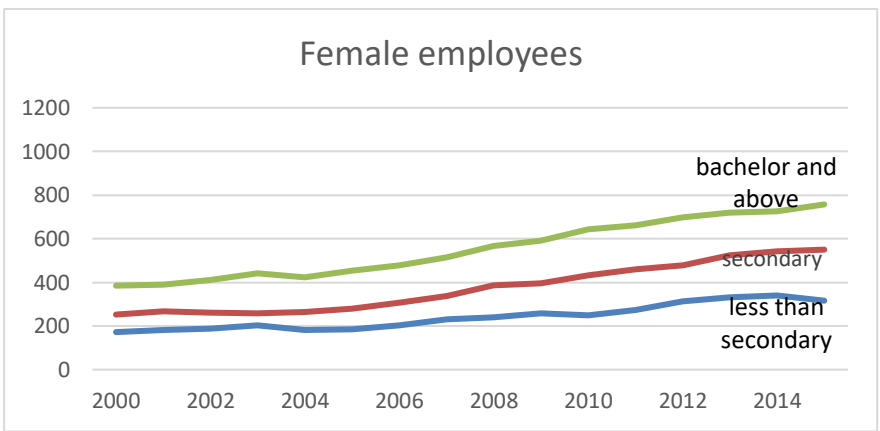
Table 1: Employed Jordanians by educational level

Employed by educational level	% of overall total	% out of female respondents	% out of male respondents
Illiterate	1	1.2	1
Less than secondary	52.1	14.9	59.4
Secondary	10.8	5.6	11.8
Intermediate diploma	9.5	18.1	7.8
Bachelor	26.6	60.3	20
Total	100	100	100

Source: *DoS, Employment survey, 2016*

Figure 2: Average monthly wages in US$ of employees in Jordan by gender





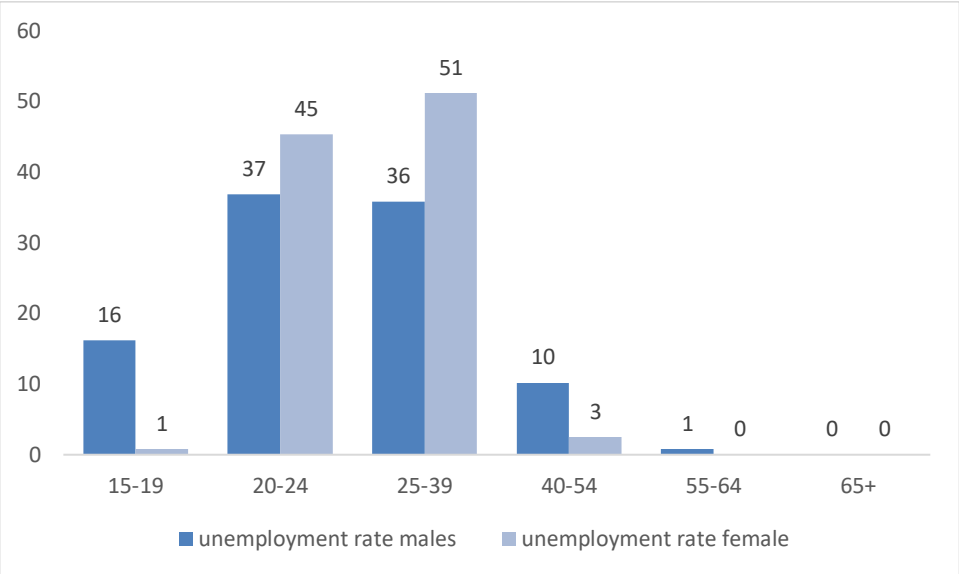
Source: *DOS, Employment surveys from 2000-2016*

4. Unemployment and skills mismatch

In 2016, a survey by the Jordan Department of Statistics estimated the number of unemployed to be 253,600. Thus, the unemployment rate in 2016 was 15.3% and estimations for 2017 predict an increase to 18.3%.

Figure 3 presents unemployment rates by age group and gender for 2016. The age group that is most affected by unemployment is the young; the unemployment rate among people aged 20-24 is namely almost 40%. The unemployment rate for young females is even higher (Figure 3).

Figure 3: Unemployment rate by age group and gender

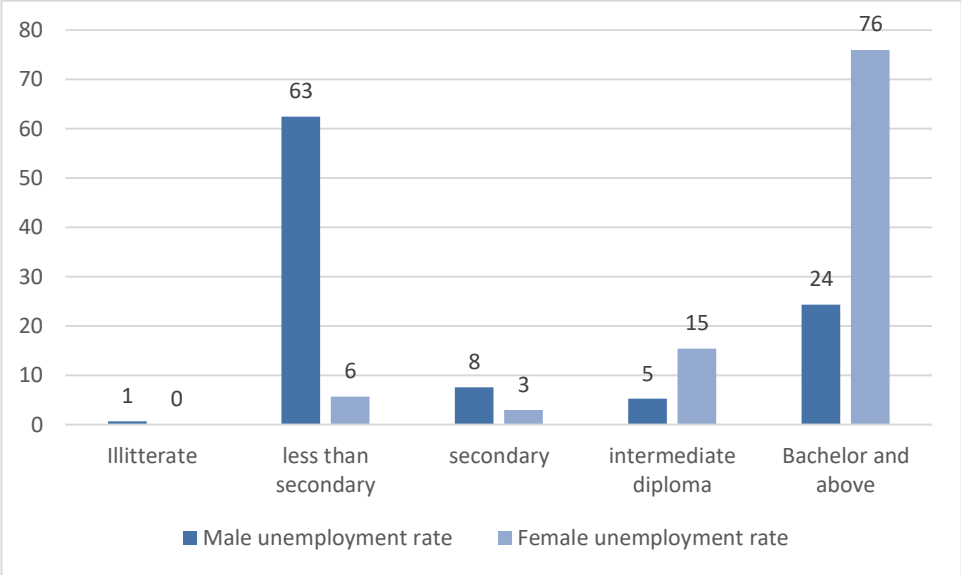


Source: *DoS, Unemployment Survey, 2016*

Thus, youth unemployment represents a great challenge for Jordan and needs to be solved, in particularly in relation to the high population growth. The analysis of unemployment by educational level reveals that bachelor graduates suffer from very high unemployment rates (24% among males and 76% among females). This is a clear sign of the existence of a mismatch between skills required by the labour market and skills provided at university. Achieving a bachelor degree definitely does not increase the chances of finding a job. We can refer to this as a case of over-education and/ or under-skilling, in the sense of a mismatch between the academic qualifications of job seekers and the skills required by the market.

Figure 4 further reveals an extremely high unemployment rate among males who did not complete secondary school (63%). At the same time, according to the Department of Statistics, the number of foreign workers with a regular working permit is estimated to be 320,000. This is a puzzling fact, as most foreign workers are doing manual, unqualified jobs: almost 28% of the foreign workers are active in agriculture, 20% in trade, restaurants, hotels, and personal services, and 17% in manufacturing (DoS, 2017).

Figure 4 : Unemployment rate by education and gender



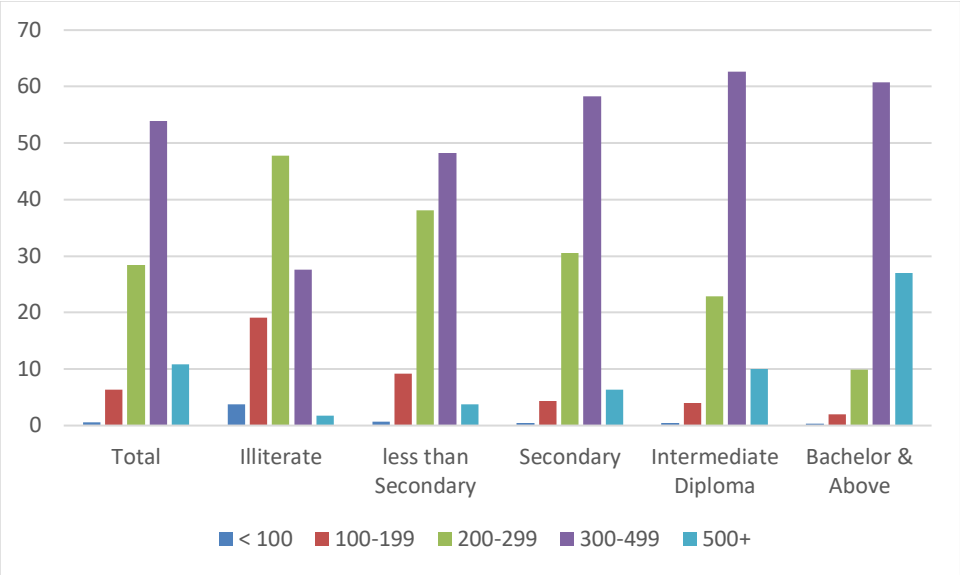
Source: *DoS, Unemployment Survey, 2016*

The high unemployment rate of graduates is a clear signal of the existence of skills mismatch in Jordan, as it implies that the education system does not provide the skills required by the labour market. These both point towards cases of under-skilling and over-education. Specifically, under-skilling seems to be a general trend which concerns several countries of the MENA region, as "across the region, firms that have grown the fastest are more likely to perceive the lack of an adequately educated workforce as a major constraint" (European Bank for Reconstruction and Development, 2016).

At the same time, as the Jordan National E-TVET Strategy (2014) points out, there are "too many academically qualified Jordanians while the market asks for lower skilled labour and technicians." This mismatch is aggravated by the fact that the profile of university graduates is not providing the practical skills required by the labour market as "their education does not match with the demands of the industry even in the corresponding professions as the skills learned are too academic and not sufficiently practical" (Jordan National E-TVET Strategy, 2014).

From what emerges out of the DoS survey for 2015 (Figure 5), having a bachelor degree or above increases the chances of a salary in the highest category, but the major bulk of bachelor graduates still perceives a wage of between 300 and 499 Jordanian Dinar, similarly to that of individuals with only an intermediate diploma and secondary education.

Figure 5: Jordanian employed persons by education and wage category in JD (percentage distribution for 2015) [1]



Source: *Survey data by DoS, 2016*

The labour market in Jordan is influenced by the social contract that sees employment policies as a way of redistributing rent and gaining loyalty. This is a typical feature of the MENA countries and in this way, that is by "using labour markets as means to distribute rents and to buy political quiescence, Arab governments have essentially undermined the labour markets' primary function, which is to efficiently allocate human capital to its most productive uses and to signal the kind of human capital investments that are needed" (Assaad, 2014).

Looking further at the gender distribution across wage groups (Figure 4), it emerges that a slightly higher share of female employees than males earns between 300 and 499 JD per month. Actually, as a corollary to the low participation rate of females, it is a fact that women would rather exit the labour force than have a job not meeting their qualifications and/ or wages expectations. Similarly, failing participation rates of females have also been observed as a result of lower public sector hiring, both in Jordan and among the MENA.

Overall, these results point to the urgency of education sector reform. The authorities are aware of this need and, in 2015, King Abdullah II formed a national committee to develop a National Strategy for Human Resources Development 2016-2025. The strategy was formulated and released in 2016 and is intended to signify an umbrella for every strategy and initiative concerning human resources formation, education, training, and employment.

The National Strategy corroborates the idea that in Jordan there is “an oversupply of university graduates and an undersupply of skilled technicians to power Jordan’s key industries” (National Strategy for Human Resources Development 2016-2025). The document centres on the four pillars of “Early Childhood Education and Development, Basic and Secondary Education, Technical and Vocational Education and Training, Higher Education” (National Strategy for Human Resources Development 2016-2025).

[1] The Jordanian Dinar (JD) is peaked to the US$ with a rate of 1 JD=1.41044 US$.

5. Theoretical Framework for Estimating the Returns to Education

In its basic formulation, Mincer's equation models wages as dependent on years of schooling and experience, as follows:

$$\log W = a + bS + cE + \varepsilon \quad (1)$$

with W representing wage, S, years of schooling, E, experience (typically modelled as the difference between present age minus years of schooling), and ε the error term.

In light of the debate and on the main critiques to the estimation of returns to education (see Section 2), this study considers a modified Mincer equation regressing the logarithm of wages on the years of schooling, i.e.

$$\ln W = a + bS + \text{error} \quad (2)$$

Control variables are excluded to avoid endogeneity with education. In econometric terms, control variables should be treated as instrumental variables (IV), whereas "the validity of a particular IV estimator depends crucially on the assumption that the instruments are uncorrelated with other latent characteristics of individuals that may affect their earnings" (Card, 1999). Thus, from a theoretical point of view, the addition of control variables to capture the returns to education is critical, per se. This is confirmed by previous findings, revealing that IV estimations tend to provide a higher estimation of the returns to education than the basic OLS.

Experience is not directly encompassed in the estimated model, but we indirectly take experience into account by randomising it: we refer to independent cross section data, with cohorts being three different educational levels (pre secondary, secondary, bachelor and more). Each cohort is built out of large scale annual surveys by the Department of Statistics of Jordan, looking at a random sample of the adult population. Given the large size of each cohort, we expect age and experience to be randomised. In addition, relying on large cohorts, we can reasonably assume that the distribution of skills and ability is the same within each cohort.

The cohorts will be further disaggregated by gender and by public versus private sector employment. The differences between these groups of individuals are analysed, to compare returns to education between males and females.

Accordingly, we estimate gender differences in the returns to education, based on a simplified Mincer equation, in which wages are regressed on education only, considering a dummy variable for gender, where 0 is for males and 1 for females.

Thus, the estimated equation assumes the following form:

$$\ln W = a + b_0 S + b_2 D + \text{error} \quad (3)$$

with D=0 for males and D=1 for females.

6. Data specification

The analysis is based on data from the Employment Survey by the Department of Statistics of Jordan (DoS). This survey is run over a large scale representative sample of all public and private sector establishments within the country. It is run on a yearly basis and conforms to international standards and definitions. Data from this survey are independent repeated cross sections, as they are collected for different individuals. Our analysis considers the period between 2000 and 2015.

Actually, surveys generating genuine panel data are missing in many countries (Verbeek, 2008). Therefore, it is pretty common to have to rely on repeated cross sections to generate a set of pseudo panel data. The underlying idea for analysing repeated cross sections is to group data into cohorts and to consider averages within these cohorts as an observation in a (pseudo) panel data setting (Deaton, 1985).

Due to the size of the sample and to its randomization, we can treat the repeated cross sections from the Employment Surveys as pseudo panel data. Data has, thus, been divided into three cohorts, based on e educational level. We herewith obtain three (mutually exclusive and collectively exhaustive) groups, including individuals with less than secondary education (i.e. between 0 and 11 years of schooling), with secondary education and intermediate diploma (i.e. from 12 to 15 years of schooling), and with bachelor degree and above (i.e. more than 16 years of education). According to the model being estimated, the variables considered are wages in JD in logarithmic form to be regressed against educational level.[2]

7. Econometric analysis and results

In general, there are three main models that can be applied to panel data: pooled models, fixed effects models, and random effects models. The choice between the different models depends on the characteristics of the data (for more, see Greene, 2012). Thus, to determine which model is more appropriate, a pairing comparison of the different models and specific tests should be done. Specifically, the F-test compares the fit of pooled versus fixed effect models, the Lagrange Multiplier (LM) pooled versus random effect models, while the Haussman test compares fixed to random effect models.

For the present analysis, the Redundant Fixed Effect Test has revealed, for all of the three variations of the model, that fixed effect models are the appropriate choice (see the results in Table 2).[3] Random effect models do not suit our data, as educational level is time invariant (Park, 2011).

The results from the econometric estimation of equation (3) by mean of fixed effect models are presented in Table 3.

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[2] The Jordanian Dinar (JD) is pegged to the US$ with a rate of 1 JD=1.41044 US$.

[3] For the econometric analysis, the software EViews has been used.

Table 2: Results of the econometric estimations

Dependent variable	*LOG(W)*
Constant	4.997083*** *SE 0.032385* *t-Stat 154.3039*
Schooling	0.066563*** *SE 0.002174* *t-Stat 30.61694*
Dummy gender (0=Male; 1=Female)	-0.305115*** *SE 0.024101* *t-Stat -12.66004*
R^2	0.9512
Adj. R^2 F-statistic	0.9406 28.27***

*** significant at 1%

All of the coefficients for the estimated regression are significant at the 1% level and the adjusted R^2 is 0.94. The results indicate that returns to education in Jordan are approximately 6.7%, i.e. on average, one additional year of schooling for an employee in Jordan increases the wage by 6.7%. This result is in line with previous studies which assessed that returns to education typically vary between 2 and 10% (e.g. Harmon et al., 2000).

The negative sign for the coefficient of the dummy variable indicates that female wages are less than male wages. To determine the ratio of the average female wage to the average male wage, we have substituted the years of schooling and the values of the dummy variable in the estimated equation. By taking the exponential value of this result for males and for females (thus, solving the equation by wage), we can calculate the ratio of the average wage of females to males. As follows, we present the calculation for one year of schooling:

$$\ln(W) = 4.997 + 0.067(1) - 0.305(0) = 5.064 \quad => \quad e^{5.064} = 158.222 \qquad (3)$$

$$\ln(W) = 4.997 + 0.067(1) - 0.305(1) = 4.759 \quad => \quad e^{4.759} = 116.629$$

Dividing the wage of females by the wage of males for one year of education, we obtain the ratio of female to male wages:

$$\frac{116.629}{158.222} = 0.737 \approx 74\% \qquad \textbf{(4)}$$

This ratio means that, on average, female employees earn approximately 74% of their male colleagues. This calculation yields the same ratio for every number of years of schooling.

A major implication is that female workers seem to be disadvantaged by the labour market. Despite their high educational level, female participation in the labour market is still very limited and earnings are lower. The authorities seem to be aware of the gender bias with wages and, since 2010, Jordan has been actively cooperating with the International Labour Organization (ILO) to promote wage equality across genders.

8. Conclusion

The present study adds to the existing literature on the link between education, skills, and earnings, focusing on the case of Jordan. It compares the education premiums of males and females by means of a simplified Mincer equation and further discusses skills mismatches in the Jordanian labour market.

The analysis reveals that the wage premium from one additional year of schooling is 6.8% for males and 5.4% for females. Actually, for most of the countries, returns to education seem to be higher among females (Harnon, 2000; Lauer, 2004) and there is further evidence showing that the gap between male and female returns to education is larger in the countries with a lower female participation in the labour market (Harmon et al., 2000). We believe that our results should be associated with the peculiarities of the Jordanian labour market, which is characterised by an extremely low participation rate of females and high unemployment rates, notwithstanding females' high education profile. This result corroborates evidence on the so-called "gender equality paradox", which is widespread in the MENA region and points towards the discrepancy between substantial gender equality in accessing education, vis a vis low participation rates of females (World Bank, 2013).

The analysis of skills mismatch in Jordan signals that there is a gap between the skills offered by job seekers and the skills required by the labour market. In particular, the Jordanian labour market seems to be both characterised by a sort of over-education and by under-skilling. Over-education is revealed by the high unemployment rate among graduates, while under-skilling is revealed by the high unemployment rate among individuals with less than secondary education (notwithstanding a large number of foreign workers, that are mostly active in manual and non qualified jobs). Quoting the National Strategy for Human Resources Development 2016-2025, there is in Jordan "an oversupply of university graduates and an undersupply of skilled technicians to power Jordan's key industries."

Skills mismatch carries a high potential cost for an economy, both in terms of low wages (in Jordan returns to education are not particularly high), and in term of skills shortages. Particularly concerning skills shortages, they typically affect fast growing firms that by the rule are "also more likely to invest in the formal training of employees" (EBRD, 2016). Thus, addressing skills mismatch represents an important first step in attracting investment. Hereby, reforming the educational system to bridge the gap between education and the labour market, promoting vocational training and diffusing a culture of entrepreneurial education, are possible ways forward.

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