Inequality of opportunity and (unequal) opportunities in the youth labour market: How is the Arab world different?

Abstract

Using the recent school-to-work transition surveys for Egypt, Jordan and Tunisia, we address the unique phenomenon in the Middle East and North Africa region of disproportionately high levels of unemployment among educated young people. Our focus is on assessing to what extent high graduate unemployment is related to inequality of opportunity or rather to deeper structural characteristics that create mismatch between the skills demanded in the market and those supplied by labour market entrants. We find that structural characteristics, namely the low availability of high-skill jobs and the low value placed on skills gained through the system of vocational training, have the greatest explanatory power. The policy focus should therefore be on creating high quality employment opportunities and bridging the gap between skills supplied and skills demanded in the labour market.

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1.   Introduction[1]

The Middle East and North Africa (MENA) labour market is emblematic of a (youth) job crisis that not only long preceded, but also provided an important trigger to the Arab Springs and subsequent mass outmigration (World Bank, 2014a). The high level of youth unemployment and inactivity in the region is consistent with the global trend of premature deindustrialization that constrains the ability of low and medium income countries to create sufficient number of jobs for their labour market entrants (Rodrik, 2015). Indeed, the vast majority of labour markets in MENA countries are characterized by dominant service sectors which have historically shown a much smaller labour absorption potential than a booming manufacturing sector. What makes the MENA region special is not only the size of the phenomenon – with youth unemployment rates in most of these countries double the global average (ILO, 2015) – but also the disproportionately high levels of unemployment among educated youth (Barsoum et al., 2014; ONEQ, 2014).

There is large level of consensus that the current state of economic (and related labour market) stagnation in the region is linked to the dissolution of the Arab mode of development followed from the time of independence until the mid-1980s, characterized by bloated public sectors and generous redistribution policies, possible on account of several decades of high oil prices. According to Assaad (2014), the end of this development model has resulted in job scarcity with labour market participants queuing for jobs in the declining public sector.

At the same time, there is little agreement – and perhaps even understanding – of the precise nature of labour market stagnation and the identity of people most severely affected. Inequality of opportunity is frequently given as an example of causes for malfunctioning in the labour markets worldwide. For MENA, Salehi-Isfahani et al. (2013) argues that educational achievements in as many as 16 countries depend significantly on parents' backgrounds and community characteristics. If higher skilled jobs are valued in the labour market, the youth from privileged background would thus have better results in their transitions to the labour market. Yet in the context of declining public sector, which had served as a haven for tertiary educated entrants, the outcome is high levels of graduate unemployment. World Bank (2014a) highlight another layer of unequal opportunity in the MENA labour markets which has to do with "connections" that proved to play a role in the process of securing employment. Admittedly, irrespective of whether access to education is restricted to a privileged few, if family background and connections play important roles in securing employment, only a privileged few educated people is able to acquire a desirable job at par with their education.

At the same time, the alarming rates of unemployment among university graduates might be a sign of an even deeper structural problem. Some analysts attribute the phenomenon to poor education quality geared towards the requirements of public sector employment in the post-independence era (Assaad, 2014; Brown et al., 2014). These arguments are consistent with evidence of high levels of qualifications mismatch (Barsoum et al., 2014). In other words, it is possible that either (i) educational attainment is inconsistent with the skills demanded in the market because of poor quality of the education system (for instance more focus on academic as opposed to transferable soft skills) or because of inappropriate specializations (for instance, over-supply of humanities or social science degrees), or (ii) supply of graduates significantly exceeds demand. There is evidence for

instance that even in one of the best performing MENA countries – Jordan – most of the recent employment growth happened in low skilled and low paying sectors such as construction and garments (Brown et al., 2014). While jobs may be available in low skill sectors, educated young people are reluctant to take them, preferring instead to remain unemployed.

The purpose of this paper is to explore a wide array of interrelated structural and inequality of opportunity factors affecting the youth labour market in the Arab world. Our aim is to find out how family background and observed skills determine the allocation of young people across different sectors in the economy. Conditional on these allocations, and after accounting for unobserved characteristics that influence them, we also aim to establish what returns observed skills bring to labour market participants. The results will help us answer the question of whether the observed labour market stagnation in the MENA region and high youth unemployment rates are best explained by either (i) Classical inequality opportunities, proxied with family background, or (ii) Structural characteristics, reflected in an absence of demand for certain types of education or experience. Both factors will be measured against (i) the allocation of young labour to employment sectors and (ii) the returns to skills in these sectors.

The methodology applied links returns to observed skills in a selected number of sectors to allocation of labour across these sectors, conditional on family background. The method allows us to not only assess the degree to which family background determines the allocation of labour across desirable and less desirable sectors in the economy, but also to explore which types of education are valued by the dynamic sectors in the economy. The key advantage of this method is our ability to not only measure the return to observed skills such as education level, but also take into account the potential influence of unobserved characteristics such as quality of education, entrepreneurship or ability to adjust to the new environment. We can verify what types of potential intra-sectoral misallocation of resources – for instance across paid employment and self-employment – affects returns to young people's skills in the economy. Our estimates are based on the ILO's school-to-work transition surveys (SWTS) for three MENA countries – Egypt, Jordan and Tunisia. Based on analytical reports produced to summarize SWTS results,[2] we believe that the labour market experience of youth in these three countries – in particular, the unique phenomenon of high unemployment among the highly educated – is fairly representative for the region. The diagnostics provided should be helpful in outlining policy recommendations.

The rest of the paper is organized as follows. In section 2, we outline our core econometric methodology and related empirical specification. Section 3 describes the data and reports detailed descriptive statistics. In Section 4 we highlight our main empirical results. Section 5 offers further discussion and supporting statistics and section 6 concludes.

2. Methodology and empirical specification

2.1 Econometric methodology

The model on which the empirical analysis is based is:

[1] $Y_s = X_s \beta_s + U_s$

[2] $Y_s^* = Z_s \gamma_s + \eta_s, \qquad$ s=1…M,

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[2] All national reports analyzing the SWTSs are available at www.ilo.org/w4y.

where Y_s refers to earnings associated with specific sectors, Y_s^* is a discrete choice variable indicating the sector of relocation of youth labour market participants. Disturbance U_s satisfies $E(U_s|X) = 0$ and $V(U_s|X,Z) = \sigma^2$.

Note that when using OLS, the latent (earnings) equations in [1] are run separately. However, when the outcome earnings variable is observed only if category *s* is chosen, U_s and η_s are not independent and the least squares estimates of β_s would be biased. Heckman (1979) addresses this problem in the context of a two sector (say working versus not working) model. Lee (1983) extends Heckman's logic to a polychotomous case of M number of sectors and a multinomial logit estimation of the equation in [2]. The problem with both Heckman's and Lee's models is that they group all the information related to the sectoral allocation stage of the model together and ignore the correlation between the error terms of each sectoral choice equation with that of each wage equation. Intuitively, having this information would help us assess whether young people in paid employment are negatively selected compared to unemployed or self-employed young people of similar characteristics. In other words, it will not only give us an idea of whether there is misallocation of resources in the MENA labour markets, but also indicate the precise pairs of sectors among which such misallocation of resources has taken place.

To gain further insight into these issues, we use the Bourguignon, Fournier and Gurgand [thereafter BFG] (2001) version of the model, which explores explicitly the association between U_s and η_s, $U_i = \sigma_i \sum_s \rho_s \eta_s^* + \omega_i$, for each *i*. The ultimate bias-corrected earnings equation is:

$$[3]\ Y_i = X_i \beta_i + \sigma_i [\rho_i m(P_i) + \sum_{j \neq i} \rho_j \frac{P_j}{(P_j - 1)} m(P_j)] + v_i.$$

2.2 Empirical specification

In line with the discussion in section 1, we adopt the following empirical specification (the precise definition of all variables is provided in Annex II):

$$[4]\ LnHourlyWages = \alpha_0 + \sum \alpha_{1i} Education + \alpha_2 Experience + \alpha_3 Age + \alpha_4 Age^2$$

$$+\alpha_5 Female + \alpha_6 Rural + \sum \alpha_{7i} Governorate\,/\,Region + u$$

$$[5]\ Status = \beta_0 + \sum \beta_{1i} Education + \beta_2 Experience + \beta_3 Age + \beta_4 Age^2$$

$$+\beta_5 Dad_{professional} + \beta_6 Dad_{middleoccup} + \beta_7 Mum_{highskill} + \beta_6 Mum_{lowskill}$$

$$+ \beta_7 Female + \beta_8 Rural + \sum \beta_{9i} Governorate\,/\,Region + \eta$$

The main purpose of baseline earnings equation [4] is to obtain unbiased estimates of returns to skills, consistent with our aim of finding out to what extent skills supplied in the market are consistent with those demanded by employers. We adjust the stylized Mincer equation specification by distinguishing between returns to different types of education – namely university education, general secondary degrees and vocational training (the omitted variable being primary or lower than primary education) – as opposed to a single years of education variable. For Tunisia, information on vocational training combines secondary and post-secondary levels; hence, we only control for secondary and university education).

The choice is driven by the quickly growing literature on returns to vocational as opposed to (academic) tertiary education in the MENA region. In particular, several studies

have explored the ability of the vocational training system in Egypt to respond effectively to the high demand for practical skills in the market and have found that returns to vocational training in the country are very low compared to other types of education and training (Krafft, 2013; Salehi-Isfahani et al., 2009). In the case of Jordan, it has been argued that young people lack the appropriate academic focus and broad range of non-cognitive skills that are important for work in the private sector. At the same time, specialization choices are often driven by prestige as opposed to market demand (Brown et al., 2014). Evidence on Tunisia is consistent with the education-employment patterns in both Egypt and Jordan in that a large proportion of tertiary students opt for specializations in humanities, social sciences and health, while graduates in humanities and technical education programs – the majority of graduates in the country – are found to be the least employable (World Bank, 2014b).

This literature suggests that from a policy point of view it is important to estimate returns to not only broad educational categories such as university, secondary education (general and vocational), but also to concrete specializations, such as humanities, social sciences or engineering. Unfortunately, in the case of Jordan and Tunisia, specializations are available only for current students.[3] In the case of Egypt, we do have a variable that indicates the field of specialization for those who have already completed their education. For this paper, however, we re-estimate the model using educational specializations only for Egypt.

Prior literature also suggests that practical training may have greater value in the market than academic vocational training (Bhaumik and Dimova, 2013; Krafft, 2013). Hence, we include a proxy for practical experience. Given that formal on-the-job training is only relevant for people who are employed, typically in a formal sector job we define experience as a variable, taking the value of one if the respondent acquired any work experience while studying.

As indicated in section 2.1, a key advantage of our empirical methodology is our ability to remove selection bias in the estimation of returns to skills. A second advantage is the capacity to allocate labour across relevant employment statuses rather than grouping all workers into one status and non-workers into another. Given the importance of the (declining) public sector in the region, we would have ideally distinguished between public and formal private employment. Unfortunately, this distinction was not possible in the first round surveys on which this analysis is based (except for Egypt), and we shall therefore explore this in later analyses.[4] Instead, among the employment categories of status in employment we distinguish between (i) paid employment, which puts together both public and private sector salaried jobs, and (ii) self-employment. The rationale behind this distinction is to find out whether in the context of declining salaried employment (in particular public sector jobs) self-employment increases to absorb productive more labour market entrants. In addition, we distinguish between unemployed individuals and those who are not working and not looking for employment, omitting those who are involved in pursuit of full time education. In other words, the "activity status" variable in equation [5] takes 4 categories: (i) paid work; (ii) self-employment, (iii) unemployment and (iv) non-student inactivity.

As before, and for the same conceptual reasons as in equation [4], levels of education and practical experience are key covariates in selection equation [5]. Positive and significant coefficients of the different skills variables would give us an indication of whether specific

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[3] The second round of the survey in Jordan corrected for the oversight so that the area of specialization in education was asked of all youth.

[4] The public/private sector distinction is available in the second round surveys of both Egypt and Jordan.

observed skills are in high demand for the different activity statuses along the "structural explanations" line of our analysis. Importantly, Z_s also includes measures of family background, which we proxy with parental occupational variables. In the case of respondents' fathers we distinguish between professional occupations and medium-skilled occupations, the omitted category being low-skilled occupations[5]. In line with literature on intergenerational transmission of socio-economic status we hypothesize that there is a high positive correlation between father and child occupational status (Solon, 1992; Piketty, 2000). It is plausible that in the post-independence era (1960s)and prior to structural reforms after the 1980s, characterized by a large number of available white collar occupations in the public sector, intergenerational transmission of occupational status would have led to a high positive correlation of parental professional or other white collar jobs in paid employment with the child. However, in recent years, the direction of correlation between parental occupation and child employment is likely to be affected by changing demand side conditions and availability of occupations at given skill levels in both the public and private sectors. We explore this issue in some detail in our descriptive statistics.

Given that the majority of respondents' mothers (approximately 80 per cent in each country in our sample) did not work, in the case of maternal employment we distinguish between high-skilled and low-skilled jobs, the omitted category being no reported employment. While we base the interpretation of the coefficients of fathers' occupations on logic consistent with theory and evidence on intergenerational transmission of socio-economic status and demand for types of observed skills, given the low incidence of employment among respondents' mothers, we interpret the impact of mothers' occupational status as a role model effect. In particular, we expect professional mothers to enhance the tendency of children to exit inactivity. In contrast, low-skilled occupations of mothers are assumed to be needs driven and hence a proxy for a lower socio-economic status and thus related to a lower chance of children to achieve higher level of education and occupational status. We use parental occupational background variables as identifiers in our system of equations, under the assumption that while parental occupational status is an exogenous determinant of respondents' labour market choices, it does not directly influence respondents' wages.

The estimation proceeds in two steps. First, we estimate a multinomial logit version of [5] which highlights the determinants of allocation of young people across the four different activity statuses of interest to us, conditional on individual human capital characteristics and family background. Second, the estimates of [4] for each status for which information on earnings is available – in our case, the paid employment sector – not only provide unbiased measures of returns to education and experience, but also indicate whether those who are employed are either overpaid or underpaid due to misallocation of labour vis-à-vis each of the alternative status. Specifically, aside from coefficients for each observed characteristics of interest to us, the BGF model provides coefficient estimates of the selectivity variables associated with each of the four activity statuses considered in our study. If we (hypothetically) find that the coefficient of the selectivity variable associated with the self-employment status is negative in the wage equation associated with paid employment, we would know that young workers in paid employment are negatively selected (or contain inferior unobserved characteristics) compared to those who are self-employed.

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[5] Skilled occupations include categories 1-3 in ISCO-08, namely managers, professionals, and technicians. Medium-skilled occupations include categories 4-6 in ISCO-08, namely clerical support, service and sales workers and skilled agricultural, forestry and fishery workers. Low-skilled occupations include categories 7-9 in ISCO-08, namely craft and related occupations, plant and machine occupations, assembly workers; and elementary occupations.

3.   Data and descriptive statistics

As indicated at the outset, our empirical estimates are based on the ILO SWTSs for the three MENA countries for which data was available at the time of initiation of this study, namely Egypt, Jordan and Tunisia. For Tunisia, only one round of data, collected in 2013, is available; while both the first and second rounds of data collection are now completed and made available for Egypt (2012 and 2014) and Jordan (2013 and 2015). For consistency, we would have used the first cross-sectional surveys for all three countries in our analysis. Unfortunately, Egypt's first survey contains only information on earnings brackets instead of detailed earnings data. Hence, for our empirical analysis we use the data collected during the first rounds for Jordan (2013) and Tunisia (2013) and the data collected during the second round for Egypt (2014).

The datasets contain detailed information for 3,000 young individuals in the case of Tunisia, 5,405 young individuals in Jordan and 5,758 individuals in Egypt. The age applied in all three cases is 15–29. To avoid confounding the results among those who have completed their degrees and those who are combining work and schooling, we constrain our estimations to those who have completed their studies and for whom data on completed education is available. This leaves us with a sample of 3,222 individuals in the case of Egypt, 3,089 individuals in Jordan and 1,714 individuals in Tunisia. The data is representative fof 29 governorates of Egypt, 12 governorates of Jordan and seven regions of Tunisia.[6]

As a first step in our analysis, Annex I, Table A.1 highlights descriptive statistics of the variables of interest across the four activity statuses considered. We see that while the majority of young labour market participants are in paid employment– 37.0 per cent in the case of Egypt, 46.6 per cent in the case of Jordan and 37.2 per cent in the case of Tunisia – inactivity is the second largest category: 40.1 per cent in Egypt, 35.5 per cent in Jordan and 27.6 per cent in Tunisia. The share in self-employment is small, even when it includes young people who work without pay for family enterprises (contributing family workers): 13.4 per cent of the Egyptian sample, 11.3 per cent of the Tunisian sample and only 2.2 per cent of the Jordanian sample. 13.4 per cent of Egypt's, 15.8 per cent of Jordan's and 23.9 per cent of Tunisia's youth non-student population are unemployed. Overall, the data show a rather stagnant youth labour market in terms of productivity the countries, characterized by a small entrepreneurial sector and with approximately half of the young individuals remaining either unemployed or inactive.

One of the most striking observations in the descriptive statistics is the dominance of university graduates among the unemployed: 41.6 per cent in the case of Egypt, 35.2 per cent in Jordan and 32.8 per cent in Tunisia. The educational composition of paid workers and the self-employed youth is mixed and differs across countries. One-fifth (20.5 per cent) of young people in paid employment in Egypt, 27.5 per cent in Jordan and approximately 18.6 per cent in Tunisia have university degrees. In other words, in all three countries the proportion of university graduates among the employed is substantially inferior to the proportion of university graduates among the unemployed. Fewer young people with university degrees and more young people with vocational training are allocated to self-employment than to paid employment.

There are two possible explanations of these patterns, namely (i) issues related to inequality of opportunity, in particular, family background, that result in barriers to both education and productive employment, and (ii) structural issues resulting in mismatch between skills supplied and skills demanded in the market.

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[6]   Further details on the data can be found at: http://www.ilo.org/employment/areas/WCMS_234860/lang--en/index.htm and also in the respective national summary report: Barsoum et al. (2014) [Egypt], Barcucci and Mryyan (2014) [Jordan] and ONEQ (2014) [Tunisia].

Figure 1 reflects the correlations between fathers' educational attainment and that of the young person in all three countries. Not surprisingly, we see that children of educated fathers are much more likely to be highly educated themselves than children of less educated fathers. In the case of Egypt, 78.7 per cent of the children of university graduated fathers are university graduates themselves, while this is true for only 5.8 per cent of the children of fathers with no education. In Tunisia, the respective numbers are 76.9 per cent against 7.4 per cent, while in Jordan they are 63.2 and 10.1 per cent. At the same time, we do observe a degree of intergenerational mobility, especially among fathers with secondary educational degrees. Approximately one-third of the respondents whose fathers had any type of secondary degree went on to obtain a university education.

Figure 1.   **Correlation between father's and youth's education levels**
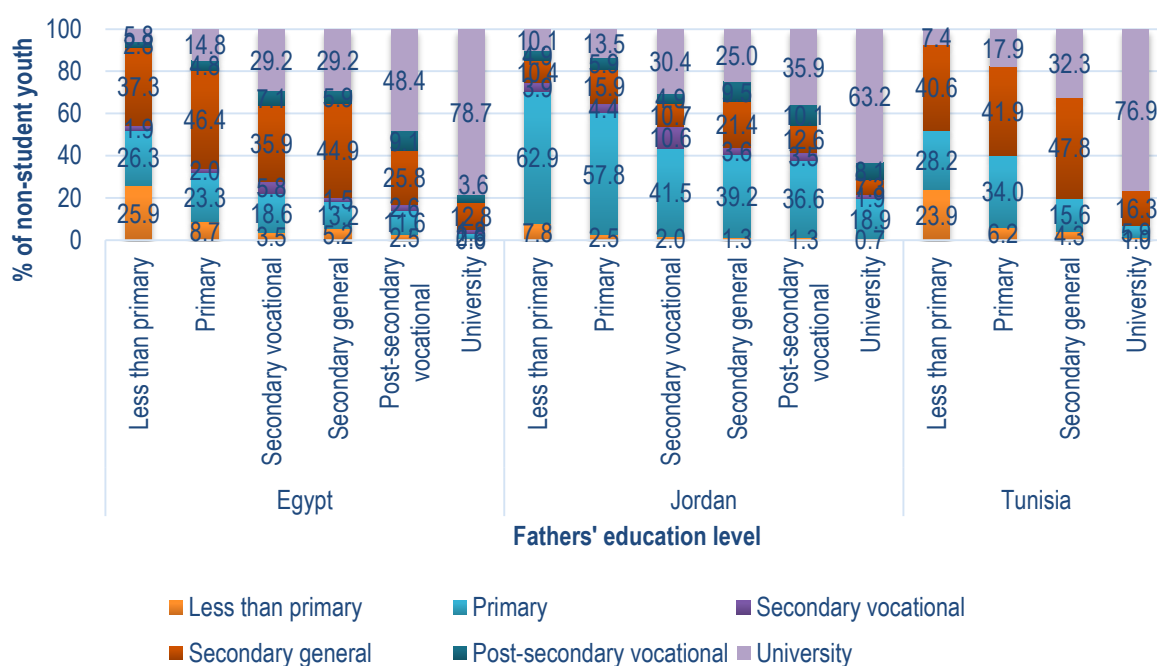
Source: Authors' calculations based on the ILO SWTS: Egypt (2014), Jordan (2013) and Tunisia (2013).

Figure 2 shows that there is also a fairly strong degree of intergenerational correlation when it comes to the occupational skills levels, especially in the low-skilled occupations. In particular, 62.9 per cent of the children of fathers in low-skilled occupations in Egypt are also in low-skilled occupations. The same correlation is 62.0 per cent in Tunisia. In Jordan, however, there is a greater degree of intergenerational mobility. Here while 46.9 per cent of youth share the tendency to work in a low-skilled occupation with their father, close to 20 per cent of them surpassed their fathers to a high-skilled occupations and approximately one-third to medium-skilled occupations.

The evidence is much more mixed in the case of youth with fathers in skilled occupations, especially in the case of Egypt and Tunisia. As many as 26.5 per cent of the children of fathers in high skilled occupations in Egypt are themselves in low-skilled occupations. The same is true of 23.1 per cent of youth in Tunisia. The majority of children of fathers in skilled occupations in Egypt (42.5 per cent) are in medium-skilled occupations compared to 39.3 per cent in Tunisia. By contrast, in Jordan there is a matching of 46.0 per cent between youth and fathers in high-skilled occupations, and only 17.5 per cent of the children of fathers in skilled occupations are in low-skilled occupations. These results thus leave some room to suppose that demand-side conditions also play a role when it comes to trends of intergenerational correlations of occupational skills levels. It is possible that greater availability of high skilled jobs in Jordan (compared to Egypt and Tunisia) explains the higher proportion of youth in skilled occupations in comparison to their fathers.

Figure 2.   Correlations between father's and youth's occupational skills levels
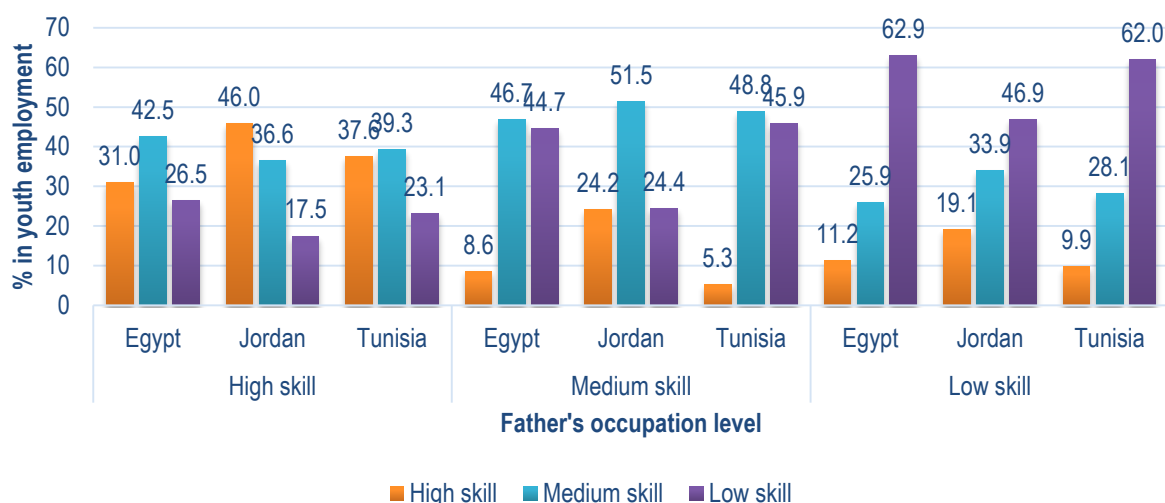
Notes: Skilled occupations include categories 1-3 in ISCO-08, namely managers, professionals, and technicians. Medium-skilled occupations include categories 4-6 in ISCO-08, namely clerical support, service and sales workers and skilled agricultural, forestry and fishery workers. Low-skilled occupations include categories 7-9 in ISCO-08, namely craft and related occupations, plant and machine occupations, assembly workers; and elementary occupations.

Source: Authors' calculations based on the ILO SWTS: Egypt (2014), Jordan (2013) and Tunisia (2013).

Further evidence in this regards is seen in the pattern of occupational structures of young workers in the three countries shown in Figure 3. As many as 51 and 57.9 per cent of the young salaried employees in Egypt and Tunisia, respectively, are engaged in low-skilled occupations. The pattern is much more mixed in Jordan, where 30.3 per cent of the salaried employees are in skilled jobs and 28.4 per cent in low-skilled jobs. At the same time, while self-employed young workers in Egypt and Tunisia are primarily in medium-skilled occupations, in Jordan, they are primarily in low-skilled jobs. The occupational pattern of employment of both paid employees and self-employed workers thus appears to be more consistent with a dualistic structure in Jordan than in Egypt and Tunisia.

Figure 3.   Occupational structure of paid and self-employed young workers
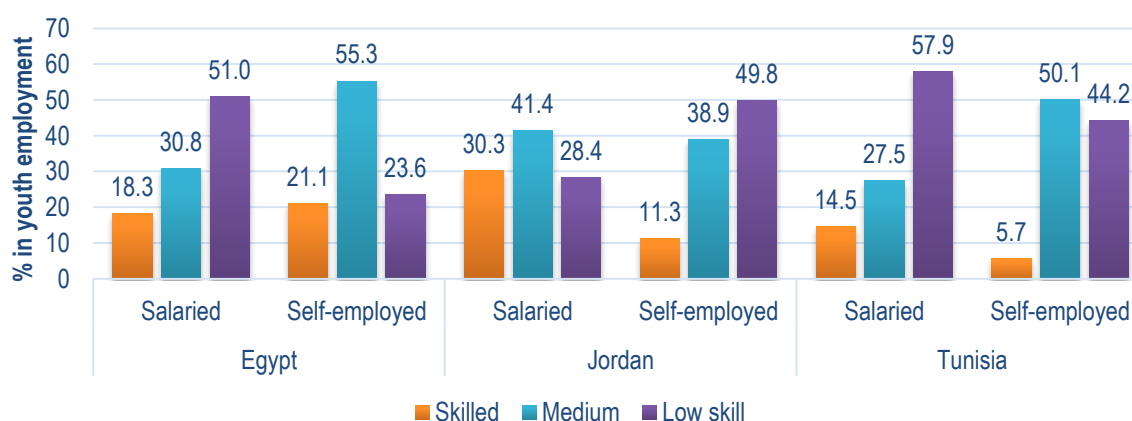
Notes: See note in figure 2 for definitions of occupational skills structure.

Source: Authors' calculations based on the ILO SWTS: Egypt (2014), Jordan (2013) and Tunisia (2013).

While the availability of skilled occupations is relatively low for youth, especially in the context of Egypt and Tunisia, the data presented in Table 1 indicate that the vast majority of youth still in school aim to attain a high-skilled job in the public sector. Unless the students eventually compromise to find lower skilled jobs beyond the public sector, they will be joining the long queues in unemployment.

Table 1.   Current students by desired occupational skills level and place of employment (%)

	Egypt	Jordan	Tunisia
Desired occupation level			
Skilled	72.9	86.9	82.4
Medium-skilled	12.5	2.9	9.9
Low-skilled	14.5	2.9	7.7
Desired place of work			
Government/private sector	72.0	62.2	65.7
Self-employment	13.8	7.1	10.2
Private sector	9.5	27.5	22.7
Other	4.8	3.2	1.4

Source: Authors' calculations based on the ILO SWTS: Egypt (2014), Jordan (2013) and Tunisia (2013).

Figure 4 highlights the kernel densities of actual and reservation wages among university graduates in the three different countries. Here we also observe a high level of mismatch, this time between equilibrium wages and reservation wages, with the latter generally exceeding the former. The pattern is more obvious in the case of Egypt and Tunisia and less so in the case of Jordan, for which we saw earlier that the prevalence of higher skill jobs in paid employment was much higher. Overall, the wage-reservation wage comparison is consistent with the paucity of high-skill salaried jobs, whereby educated young people prefer to queue for jobs, often for extended periods of time, than accept positions inferior to their training and remuneration expectations.

Figure 4.   Comparison of actual and reservation wages
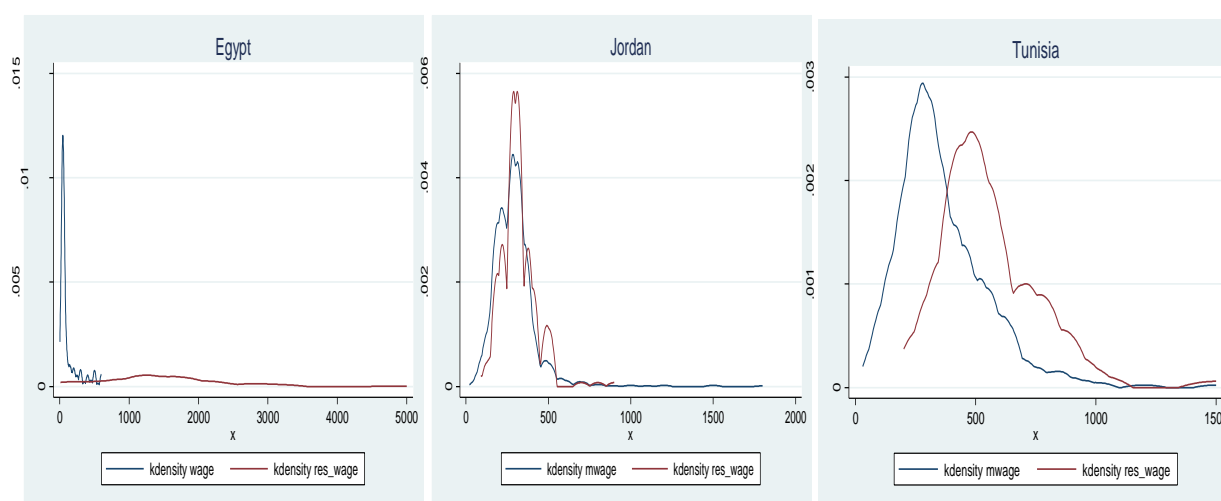
Source: Authors' calculations based on the ILO SWTS: Egypt (2014), Jordan (2013) and Tunisia (2013).

Recall that an alternative explanation of the high level of unemployment among university graduates in the MENA region highlighted at the outset is the possibility that educational attainment in the MENA labour markets is a poor signal of the skills demanded in the changing environment. The fact that the average level of experience of both paid employees and self-employed workers in all three countries (reported in Annex I, Table A.1) exceeds significantly that of young people who are either unemployed or inactive is consistent with the possibility that employers value practical skills over those acquired in the education system. The purpose of the second stage of our empirical analysis is to throw further light on this proposition by obtaining unbiased estimates of returns to available types of education and experience. Before we end our descriptive analysis, it is worthwhile noting that in keeping with expectations, young women in all three countries are much less likely

to be employed in either paid or self-employed jobs and much more likely to be unemployed or inactive than young men.

4. Econometric results

4.1 Baseline case on the role of broad educational categories in labour allocation and returns to skills

Annex I, Table A.2 reports the marginal effects from the multinomial logit model on sectoral choice (equation 2), while Annex I, Table A.3 contains the unbiased BFG estimates of the wage equations in the paid employment status of the three countries (equation 1). The results on allocation of youth across the four activity statuses of interest to us is broadly consistent with our descriptive statistics. Across all three countries, the marginal effect of university education is positive and significant at the 1 per cent level among the unemployed, and negative and significant at the 1 per cent level among inactive youth. At the same time, the impact of university education on allocating into paid and self-employment sectors differs across the countries. Only in Jordan does university education have a positive and significant impact on attainment of paid employment, while in both Jordan and Egypt, the marginal effect of university education is negative and significant in the status of self-employment.

Similarly, while vocational training has a positive impact on entering both paid and self-employment and a negative impact on not working in Jordan, in Egypt it decreases the chances of being a paid employee and increases the chance of being unemployed. The impact of general secondary education is insignificant, except in the case of Jordan, where it has a negative impact on being self-employed. Overall, the association between education and allocation across activity status echoes the results in our descriptive statistics; it is only in Jordan that high-skill job opportunities appear to be available to absorb a portion of educated entrants in the labour market. Yet, recall that even in Jordan a sizeable proportion of the university graduates end in unemployment.

As indicated earlier, these results could also – at least partially – be linked to education being a noisy signal of types of skills required by the market. We shall explore this proposition in greater rigour through our wage equation estimations. It suffices to mention for the time being that in all three countries experience has a positive impact on being employed. It also has positive impact on entering self-employment and negative impact on not working in Egypt and Tunisia. This is consistent with evidence from a range of developing countries that education is a poor signal of skills required in the market and additional training is required to fill the gap in demand and supply for skills (Bhaumik and Dimova, 2013).

Consistent with expectations and earlier statistics, young women are significantly less likely than young men to be employed and much more likely to be out of the labour force. In Egypt, they are also more likely than men to be unemployed, possibly on account of higher reservation wages among women than men, while the opposite is true for Tunisia. Having a father working as professional decreases the chance of entering paid employment in Egypt and increases the chance of being self-employed in both Egypt and Tunisia. The rest of the family background variables are either insignificant or with low levels of significance. This is consistent with the descriptive statistics discussed in the previous section, where we found that the pattern of intergenerational occupational correlations appears to be affected to a large extent by current demand side constraints.

Overall, the results on parental characteristics appear to reflect the above-mentioned break in the intergenerational transmission of occupational status in the formal/public sector in the aftermath of the social contract era, such that (on average) professional fathers may be able to assist their children in opening a business, but less likely to assure a desired public sector job. Note however that this result may be tarnished by our inability to differentiate between government/public sector occupations and other paid employment occupations. According to the World Bank (2012), when public sector opportunities in Egypt declined between the 1990s and mid-2000s, this mostly affected the children of public sector employees.. At the same time, between 1998 and 2006, government employment rates remained high among the sons and daughters of white collar workers.

We now turn to the results from our wage estimations reported in Annex I, Table A.3. To assess the appropriateness of the BFG methodology compared to OLS and thereafter acknowledge any possible misallocation of resources across sectors, we first look at the sign and significance of the selectivity term coefficients. In the case of Egypt, the selectivity term associated with the unemployment sector is significant, confirming the appropriateness of BFG in the case of Egypt. By contrast, none of the selectivity term coefficients is significant in the cases of Jordan and Tunisia, and hence OLS is our preferred methodology in the case of these countries.

In Jordan and Tunisia, the coefficient of the university education variable is positive and significant, highlighting positive returns to this type of observed skills in these markets. The OLS estimate of university education in the case of Egypt is also positive, but the significance disappears after accounting for selectivity. Recall that for Jordan we also found that university education increases the chance of entering paid employment, indicating that Jordan has been relatively more successful in both absorbing university graduates in paid jobs and rewarding those who are able to find such employment. Note, however, that our paid employment category is broad, including both public and private sector jobs. It is not obvious, therefore, whether this result is a reflection of development of dynamic sectoral niches or rather tardiness of structural reform. Recent evidence hints that the former is the case, but with job growth concentrated in the sectors where migrant workers are dominant, such as construction and the garment sector (ILO, 2013). Thus, the absorption capacity of educated graduates remains in question.

In the case of Egypt, the coefficient of the vocational training variable is negative and significant, highlighting a lower regard for this type of education compared to the omitted category of elementary or no education on the part of potential employers. The result is consistent with earlier estimates on Egypt by Krafft (2013), who argues that there is scope for improving the vocational training system in the country in terms of quality, curricula, outreach and connectivity to employers. Note also that while the coefficients of university and general secondary education are positive and significant in the case of Jordan, that of vocational training is insignificant. In keeping with our descriptive statistics, experience has positive and significant impact on wages in Egypt. Not surprisingly, the coefficient of the female dummy variable is negative in both Egypt and Jordan, and negative but not significant in the case of Tunisia.

As argued earlier, it is important to consider the effect of the sign and significance of the selectivity correction term coefficients while assessing the link between returns to skills and inter-sectoral allocation of labour. We see that in the case of Egypt the coefficent of the selectivity term associated with unemployment is negative and significant. This indicates that in Egypt paid employees get higher wages than a person selected at random, but are negatively selected – or have inferiour unobserved charactersitics – vis-à-vis potential workers that end up being unemployed.

4.2   The case of educational specializations

As argued at the outset, estimates of the impact of broad levels of educational attainment on either labour allocation and returns to skills or educational mismatch may provide a noisy picture of the gap between demand and supply of observed skills in the labour market if this gap is mostly based on concrete educational specializations as opposed to levels of education or training. For instance, in the case of the United States, Spence and Hlatshwayo (2012) argues that the majority of new job opportunities created in the past few decades were in the health sector. Hence, if we observe that demand for university-trained health specialists (namely doctors) has gone up, this would not be a good indication that increasing supply of university graduates in alternative disciplines would bring similarly positive results; graduates in others areas of specialization could well end up in unemployment.

Little is known about the demand and supply of specific specializations in the labour markets in the MENA regiona, although some non-systematic evidence suggests a general shortage of of technicalskills at the lower than university level and oversupply of tertiary graduates. For example, for Egypt, Barsoum et al. (2014) present evidence of overeducation of employees in clerical occupations and undereducation among technicians, perhaps indicating that university graduates of any specialization are often forced to take up clerical jobs, while vocational training fails to provide the caliber of technical specialists sought by prospective employers. In Jordan, students who perform well in their secondary school exit exam are expected by society and often pressurised by family to enroll in medicine, engineering or law irrespective of their preferences (Brown et al., 2014).

Similarly, for Tunisia, World Bank (2014b) highlights an oversupply of professionals, including engineers, and an undersupply of lower skill clerical, sales, craft and operators' workers. However, there is also indication that concrete specializations at different levels of educational attainment matter for narrowing the demand-supply gaps and social norms may have been instrumental in their widening. For instance,in Tunisia, about 90 per cent of the graduates have diplomas in either humanities or engineering; the results is that 30 per cent of all graduates are employed in fields that are unrelated to their specialization. The same is true for 20 to 30 per cent of all graduates in humanities (World Bank, 2014b).

Unfortunately, as mentioned earlier, in the case of Jordan and Tunisia we are not able to provide estimates of the role of concrete educational specializations on allocation of labour and returns to these specializations. We are only able to look at broad statistics on specializations of those enrolled in education at the time of the survey in these two countries. This means we can provide both descriptive statistics as well as concrete estimates of the role of completed specializations on labour allocation and returns only in the case of Egypt. Figure 5 highlights the specializations of young people currently in education (Jordan and Tunisia) or with completed education in specific fields (Egypt). In all three countries, we observe a significant oversupply of social science specializations, and of engineering graduates in Egypt and Jordan. The latter is especially large in the case of Egypt (remembering that here the results refer to graduates rather than current students).

An oversupply of graduates in given specializations may lead to both higher levels of unemployment and lower returns to skills for those graduates. To assess this proposition, in the case of Egypt for which information on the fields of specialization of graduates is available, we re-estimate our equations, substituting general educational levels of attainment with concrete specializations (Annex I, Table A.4). Once again, in the first stage of our analysis we estimate a multinomial logit model of allocation of labour across paid employment, self-employment, unemployment and inactivity. In the second stage we estimate a wage equation for paid employees. In both cases we replace levels of education with concrete specializations using the largest social sciences group as the omitted variable. Given that for some specializations the number of observations was very low in some of the

activity statuses, the BFG method failed to produce meaningful estimates for some of the specialization categories (for instance, health). Moreover, the selectivity term of the Heckman selection model turned out to be insignificant. Hence, our wage estimates are based on a simple least squares model.

Figure 5.   Educational specializations of youth
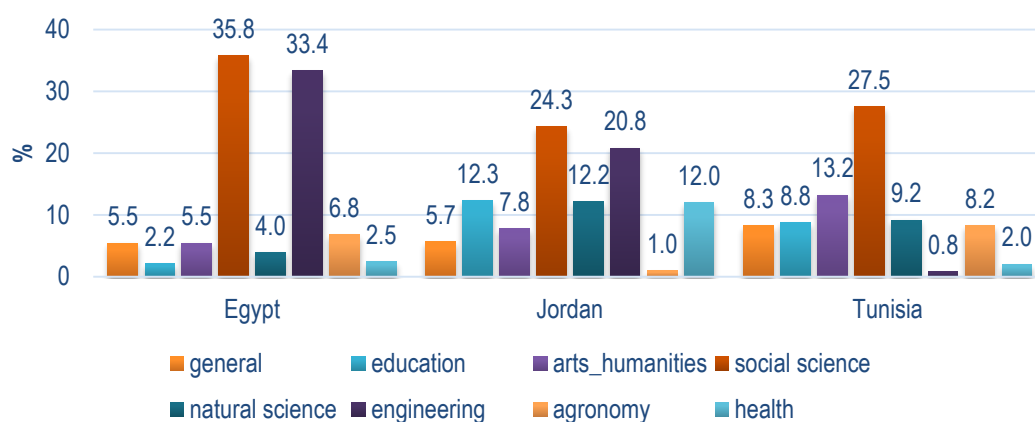
Notes: Completed specializations in the case of Egypt; specializations of current students in the case of Jordan and Tunisia.
Source: Authors' calculations based on the ILO SWTS: Egypt (2014), Jordan (2013) and Tunisia (2013).

The marginal effects and wage equation estimates, highlighted in Annex I, Table A.5, are consistent with our earlier observations. The most consistent result is that that compared to the omitted category of social sciences, health professionals are more likely to secure paid employment and are less likely to be unemployed or not working, while their observed skills also pay off to a greater degree than those of social scientists. Once again, experience has significant impact on securing employment, and the rest of our results are broadly consistent with the estimates in Annex I, Table A.2. Overall, our descriptive statistics and estimates on the role of concrete specializations for allocation of labour and returns to skills emphasize the need to take into account the demand and supply of concrete types of training in assessments of labour markets in the MENA countries.

5.   Further discussion and supporting demand-side statistics

So far, we explored in some depth supply-side factors, explaining, among other things, the unusually high level of graduate youth unemployment in the MENA region. We found that some of the most convincing explanations for this pattern are the low availability of high-skilled jobs in the labour markets as well as educational supply factors, namely an oversupply of university graduates, especially in specific disciplines (such as social sciences) and an aparent inability of existing vocational training to meet the demand for vocational skills. We also witnessed that practical experience appears to play a stronger role in both attaining employment and meeting employers' skills related expectations. To delve further in some of the issues highlighted at the outset, in this section we look at some relevant demand-side statistics from the World Bank Enterprise Surveys.[7]

Figure 6 highlights some statistics on labour market constraints faced by enterprises in the MENA region as a whole and in the three countries explored in the paper compared to both global averages and specific regional averages. We observe that educational attainment of the labour force is not an issue of primary concern for employers in the MENA region. The proportion of MENA enterprises highlighting education of the labour force as a

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[7] Available at: www.enterprisesurveys.org.

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constraint is similar to the global average and significantly lower than that of other regions, including Latin America and the high-income non-OECD countries. Among enterprises in the three countries in our sample, only those in Tunisia highlight inadequate education of the labour force as a major constraint. Shares in Egypt and Jordan, rather, are well below the global and MENA average.

Figure 6.   Demand side characteristics of the MENA labour markets
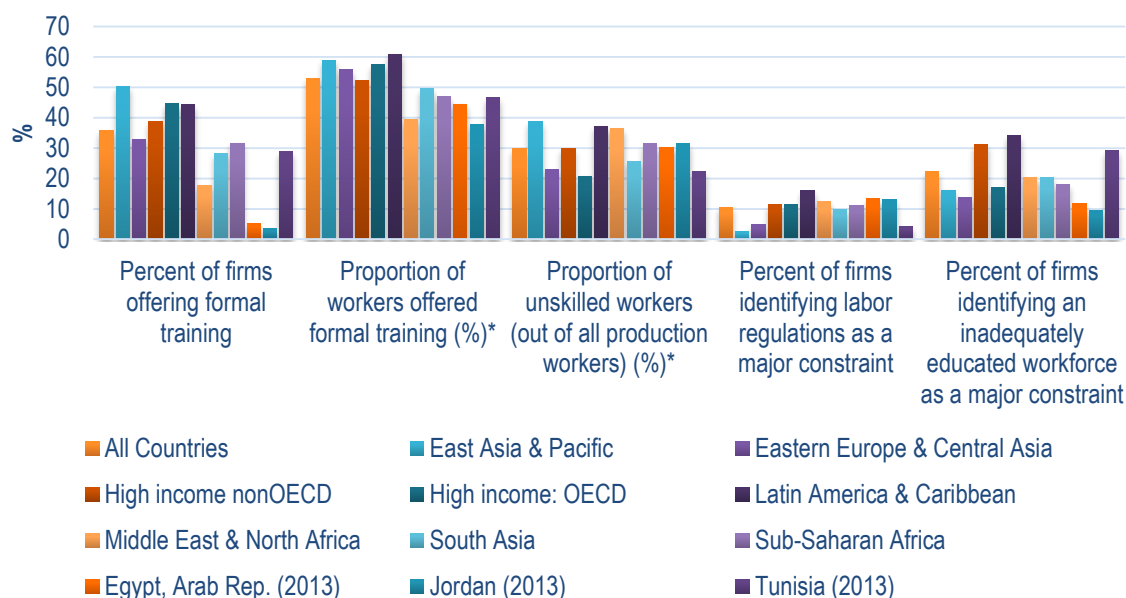
Note: The asterisk indicates that the indicator is relevant only for manufacturing enterprises.
Source: Authors' calculations based on World Bank Enterprise Surveys.

However, as seen in our empirical estimates, high supply of observed (formal education-based) skills is not necessarily likely to result in high returns to these skills; indeed oversupply of a skill reduces returns to that skill. Furthermore, practical training appears to have higher value than academic training in at least two of the countries in our sample. At the same time, looking at the statistics on enterprises offering formal training, we see that both the MENA region as a whole, and in particular Egypt and Jordan, are well below both the global and developing country averages in offering formal training. Similarly, the proportion of unskilled production workers in both the MENA region as a whole and in the countries in our sample is fairly high by global standards.

A possible solution to the Arab world's labour market crisis is movement up the technological value chain. Yet based on statistics from the World Bank's Enterprise Survey highlighted in Figure 7, we see that both the MENA region as a whole and the three specific countries in our sample rank poorly in terms of percentage of enterprises with internationally recognized quality certifications and in terms of technology licensed from foreign companies. In other words, the MENA region as a whole appears to have a long way to go before attaining a higher position in global value chains.

Figure 8 indicates that the performance of enterprises in the MENA region, measured in terms of both real sales growth and labour productivity growth, has been negative and significantly inferiour to the global average. Among the countries in the sample, only Jordan has experienced employment growth superior to that of the regional average, but once again inferiour to the global average. To summarize, the evidence from the enterprise surveys show a clear need for increased (and more effective) meausres in the MENA region towards creation of a vibrant private sector while moving up the value chains and closing the gap between the supply and demand of skills.

Figure 7. Innovation and technology characteristics of MENA and other regions

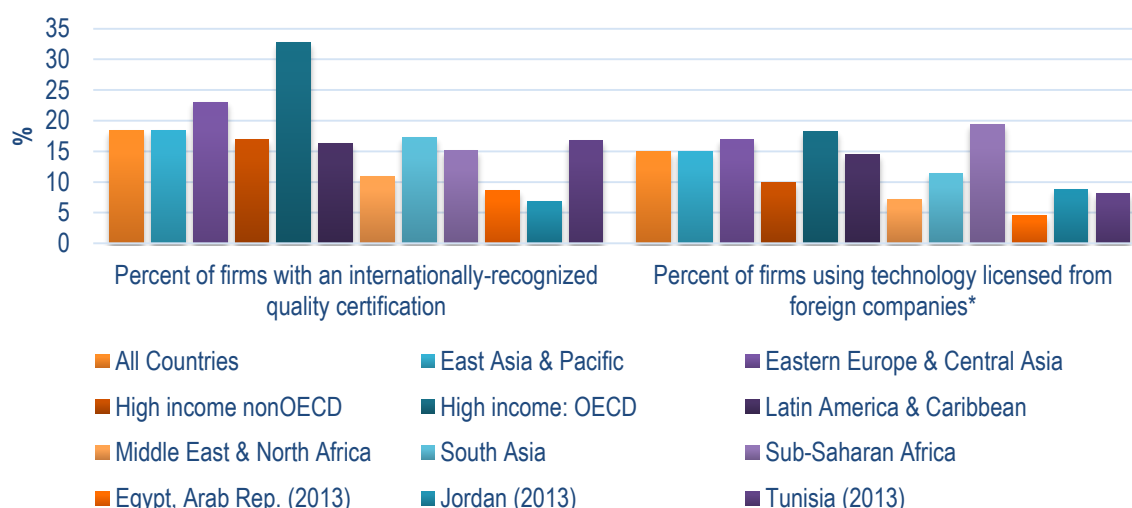Note: The asterisk indicates that the indicator is relevant only for manufacturing enterprises.
Source: Authors' calculations based on World Bank Enterprise Surveys.

Figure 8. Firm performance in MENA countries compared to global averages
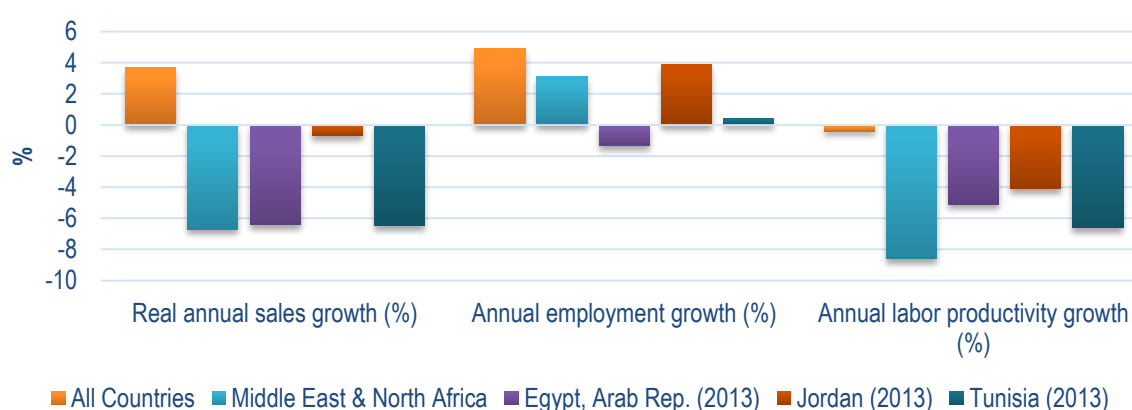
Source: Authors' calculations based on World Bank Enterprise Surveys.

6. Conclusion and policy implications

Concepts such as fairness and the creation of a level playing field from which individuals of all backgrounds can both acquire skills and use these skills productively have been at the core of philosophical movements since ancient times (see for instance Plato, around 380 BC). More recently, Sen (1999) embraces the dual policy objective of level playing skill acquisition and ability of individuals to use these skills productively by arguing that "the enhancement of human capabilities .... tends to go with an expansion of productivities and earnings power" (pp. 92). The basic idea behind conceptually related inequality of opportunity theories is that outcomes that are most valued by society – or the so called "advantages" (such as income, wealth, health status) – are determined by two types of factors: those for which individuals can be held responsible, namely "efforts" and those for which they cannot, namely "circumstances" (Dworkin, 1981; Arneson, 1989; Cohen, 1989; Roemer, 1998). While inequalities due to efforts are normatively acceptable, those due to circumstances are not and should be eliminated. In the post-World War II era this principle occupied a central position in national and international development

organizations' policies aimed at not only expanding educational attainment, but assuring equal access to both education and labour market opportunities for all.

From a labour market point of view, high investments in education and elimination of barriers to both skills attainment and productive employment are a necessary and sufficient condition for positive labour market outcomes in a world where the nature of technological change guarantees high returns to education (Author, 2014). Yet recent research indicates that the pattern of technological change and globalization in recent years has led to the disappearance of a range of routine occupations across the whole range of educational levels and has thus resulted in a polarization of the global job market into "lowsy" and "lovely" jobs (Goos et al., 2014; Spence and Hlatshwayo, 2012). While occupational polarization is now a stylized fact in developed countries' job markets, premature deindustrialization has (on average) contributed to even lower overall availability of productive employment in less developed countries (Rodrik, 2015) and difficulties with movement up the value chain lead to higher scarcity of "lovely" jobs in less developed countries compared to the more developed counterparts (Treffler, 2005). In other words, it is imperative to not only assess progress in assuring equal opportunities in individual labour markets, but also ensuring that job opportunities of adequate quality exist in that market.

The MENA region, which is emblematic of a labour market crisis that arguably reflects both issues of inequality of opportunity and demand side constraints to productive employment, is an ideal case for exploring the tension between supply (or inequality of opportunity driven) issues and demand side constraints. Using data from the ILO SWTSs for Egypt, Jordan and Tunisia, we delve into this phenomenon by trying to disentangle the specific roles of structural characteristics and inequality of opportunity factors. We do find evidence of high intergenerational correlation of both education and occupational status, but there is also evidence of integenerational mobility, especially among intermediate education and occupational status groups. At the same time, in a rigorous econometric sense, high youth unemployment among university graduates is best explained by the paucity of high-skilled jobs and associated excess supply of academic degrees, especially in certain areas of specialization. Furthermore, practical experience appears to be of much greater value to the market than formal vocational training, although statistics highlight lower than global average shares of youth participating in professional training in the MENA region. While self-employment could potentially be a dynamic absorber of high skilled labour market entrants, we find that this sector is both small and stagnant.

Governments in all three countries in our sample have put concentrated effort on resolving the latter challenge with programmes aiming attempts to upgrade the quality of vocational training. The National Employment Strategy of Tunisia, based on 2012 Decree 2012-2369, emphasizes the need to help young people obtain certifications and work experience and offers training programmes for those who want to enter self-employment (Zouari, 2014). Similarly, the Ministry of Labour of Jordan has developed a strategy to facilitate skills development by providing vocational training at an advanced technological level and providing appropriate training for teachers in lines with labour market requirements (Taghdisi-Rad, 2012). Investment in small and medium enterprises (SMEs) is also high on Jordan's priorities within the National Employment Strategy 2011–2020, especially in terms of improved access to finance (ILO, 2013). Egypt's Youth National Action Plan (2010–2015) also discussed support for entrepreneurship, but the role of vocational and technical education is fairly vague in the document (ILO, 2010).

At the same time, bridging the gap between skills demanded and supplied in the market remains a challenge in the region and elsewhere. For instance, it has been acknowledged that the original goals on vocational training upgrade in Jordan have not been met, due to (i) the stigma of academic failure associated with entering the stream, (ii) inadequate facilities, outdated equipment and unmotivated instructors, (iii) insufficient emphasis on applied or hands on practice, and (iv) little or no involvement of the private sector (Jordan Ministry of

Labor, 2012; pp. 40-43). Moreover, structural challenges such as limited competition, low level of entrepreneurship, weak rule of law and corruption, continue to plague the market (OECD, 2014).

This evidence is consistent with the performance indicators highlighted in section 5 that point to stagnating growth in the region. Between 2010 and 2013, foreign direct investments (FDI) increased by 54 per cent in Latin America and by 40 per cent in sub-Saharan Africa, while the MENA region experienced a 30 per cent decrease (OECD, 2014. Indeed, in 2013 the region as a whole accounted for only 6 per cent of total FDI, most of which was directed to natural resources and key non-tradable sectors like construction.

In sum, the youth unemployment crisis in the MENA region is a complex, multifaceted challenge and requires holistic solutions. Efforts in enhancing the quality of vocational training are likely to be frustrated without addressing both loopholes in the education sector and cultural issues. Programmes to improve the school-to-work transition will need to be evaluated in search of the most effective mechanism for (i) giving employers a direct role in curriculum building, (ii) embedding the principals and modalities of work-based learning into the formal education and training system, including through internship and apprenticeship programmes, (iii) scaling up investments in early career guidance, (iv) modernizing employment services and (v) overcoming gender stereotyping in both curriculum and occupation options. The supply-side challenges are many, but holistic, long-term intervention models could potentially make a different. It is important to bear in mind, however, that investments in human capital development are likely to be counterproductive in the absence of comprehensive structural and institutional reforms which address effectively the demand-side stagnation in many economies in the region.

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Annex I. Econometric results

Table A.1   Descriptive statistics

Variable	Egypt				Jordan				Tunisia			
	paid	self	unemp	not working	paid	self	unemp	not working	paid	self	unemp	not working
age	23.6604	23.6883	23.6843	23.1638	23.6290	25.2720	22.2801	22.7163	24.5362	23.6904	23.8170	23.6550
	(3.6104)	(3.9572)	(3.3057)	(3.7649)	(3.3304)	(2.9426)	(3.4474)	(3.9866)	(3.3398)	(3.8725)	(3.3291)	(3.9884)
experience	0.2381	0.3703	0.0625	0.0418	0.0790	0.0762	0.0467	0.0139	0.3344	0.2575	0.2167	0.0699
	(0.4259)	(0.4829)	(0.2420)	(0.2002)	(0.2697)	(0.2654)	(0.2111)	(0.1170)	(0.4718)	(0.4473)	(0.4120)	(0.2550)
highschool	0.0212	0.0340	0.0070	0.0232	0.1266	0.0511	0.1121	0.1889	0.7591	0.8730	0.6453	0.8802
	(0.1440)	(0.1812)	(0.0834)	(0.1507)	(0.3325)	(0.2202)	(0.3155)	(0.3914)	(0.4277)	(0.3329)	(0.4784)	(0.3247)
vocational	0.3866	0.4624	0.3926	0.4379	0.0570	0.1566	0.0246	0.0181				
	(0.4870)	(0.4986)	(0.4883)	(0.4961)	(0.2319)	(0.3634)	(0.1549)	(0.1334)				
intermediate	0.0385	0.0398	0.0458	0.0426	0.0809	0.0262	0.0707	0.0511				
	(0.1924)	(0.1955)	(0.2090)	(0.2020)	(0.2727)	(0.1597)	(0.2564)	(0.2203)				
university	0.2052	0.1323	0.4162	0.1035	0.2753	0.1554	0.3520	0.0879	0.1860	0.0966	0.3280	0.0685
	(0.4038)	(0.3388)	(0.4929)	(0.3046)	(0.4467)	(0.3623)	(0.4776)	(0.2831)	(0.3891)	(0.2954)	(0.4695)	(0.2527)
female	0.1480	0.1214	0.5728	0.8206	0.1901	0.0562	0.4155	0.8636	0.3074	0.2596	0.4228	0.8219
	(0.3551)	(0.3267)	(0.4947)	(0.3837)	(0.3924)	(0.2304)	(0.4928)	(0.3432)	(0.4614)	(0.4384)	(0.4940)	(0.3826)
dad-professional	0.2964	0.5498	0.3978	0.2523	0.1857	0.1608	0.2257	0.1192	0.1344	0.1299	0.1237	0.0685
	(0.4567)	(0.4975)	(0.4894)	(0.4344)	(0.3888)	(0.3673)	(0.4180)	(0.3240)	(0.3411)	(0.3362)	(0.3293)	(0.2527)
dad-medium occup	0.2869	0.1940	0.2038	0.3530	0.4026	0.4080	0.3907	0.4245	0.3086	0.4957	0.2935	0.3198
	(0.4523)	(0.3954)	(0.4028)	(0.4779)	(0.4904)	(0.4915)	(0.4879)	(0.4943)	(0.4619)	(0.4999)	(0.4554)	(0.4664)
mother professional	0.0843	0.0649	0.1531	0.0439	0.0979	0.0858	0.1120	0.0442	0.0245	0.0398	0.0203	0.0061
	(0.2778)	(0.2463)	(0.3601)	(0.2048)	(0.2971)	(0.2801)	(0.3153)	(0.2055)	(0.1545)	(0.1956)	(0.1411)	(0.0776)
mother non-professional	0.0562	0.0914	0.0574	0.0496	0.0587	0.0760	0.0612	0.0445	0.1030	0.1959	0.1535	0.1373
	(0.2304)	(0.2881)	(0.2327)	(0.2173)	(0.2350)	(0.2605)	(0.2397)	(0.2061)	(0.3040)	(0.3969)	(0.3604)	(0.3442)
rural	0.5708	0.6975	0.4242	0.6756	0.1889	0.1152	0.1540	0.1675	0.3345	0.5904	0.3401	0.4710
	(0.4950)	(0.4593)	(0.4942)	(0.4681)	(0.3914)	(0.3193)	(0.3610)	(0.3734)	(0.4718)	(0.4918)	(0.4738)	(0.4992)
N observations	1197	306	443	1276	1460	73	487	1069	628	190	432	464
% of sample	37.0	9.5	13.4	40.1	46.6	2.2	15.8	35.5	37.2	11.3	23.9	27.6

Notes: The figures in brackets are standard deviations. These samples are restricted to those who are not undergoing full time schooling and have non-missing observations on completed educational degrees. The estimates are weighted with the use of importance weights.

Table A.2 Determinants of youth across labour market status

Variable	Egypt				Jordan				Tunisia			
	Salaried	Self	Unemp	Not working	Salaried	Self	Unemp	Not working	Salaried	Self	Unemp	Not working
age	0.006	-0.045**	-0.007	0.046*	0.128***	0.02	-0.023	-0.125***	0.043	-0.048*	0.106**	-0.102***
	(0.22)	(-2.89)	(-0.32)	(2.000)	(4.78)	(1.52)	(-1.04)	(-6.37)	(1.16)	(-2.11)	(3.11)	(-3.56)
agesq	0.000	0.001**	0.000	-0.001*	-0.002***	0.000	0.000	0.003***	-0.001	0.001*	-0.003***	0.002***
	(0.21)	(3.17)	(-0.04)	(-2.32)	(-4.11)	(-1.14)	(0.27)	(5.97)	(-0.89)	(2.28)	(-3.52)	(3.53)
experience	0.102***	0.051***	-0.070**	-0.083**	0.076*	0.002	-0.023	-0.056	0.139***	0.042*	-0.028	-0.153***
	(4.62)	(4.42)	(-3.04)	(-3.10)	(2.37)	(0.19)	(-0.78)	(-1.69)	(5.26)	(2.41)	(-1.08)	(-5.10)
highschool	-0.085	-0.007	0.047	0.045	0.029	-0.024*	0.019	-0.024	-0.061	0.01	0.066	-0.016
	(-1.55)	(-0.24)	(0.82)	(0.87)	(1.17)	(-2.04)	(0.89)	(-1.32)	(-1.22)	(0.3)	(1.21)	(-0.40)
vocational	-0.070***	-0.009	0.115***	-0.037*	0.134***	0.019*	-0.044	-0.108**				
	(-3.68)	(-0.77)	(6.45)	(-2.12)	(3.32)	(2.34)	(-1.14)	(-2.69)				
intermediate	-0.076	-0.005	0.122***	-0.041	0.139***	-0.03	0.078**	-0.187***				
	(-1.91)	(-0.19)	(4.01)	(-1.16)	(4.44)	(-1.86)	(3.04)	(-8.22)				
university	0.027	-0.050**	0.208***	-0.186***	0.169***	-0.017*	0.145***	-0.297***	-0.04	-0.057	0.332***	-0.235***
	(1.07)	(-2.86)	(10.18)	(-8.04)	(7.86)	(-2.02)	(8.14)	(-18.41)	(-0.71)	(-1.39)	(5.84)	(-4.91)
female	-0.325***	-0.087***	0.020*	0.391***	-0.384***	-0.038***	-0.007	0.428***	-0.167***	-0.062***	-0.081***	0.311***
	(-24.39)	(-7.04)	(2.3)	(49.22)	(-28.42)	(-3.57)	(-0.68)	(-62.59)	(-8.10)	(-4.30)	(-4.29)	(21.26)
dad_professional	-0.052**	0.081***	-0.022	-0.007	0.027	-0.002	0.019	0.009	0.038	0.082***	-0.075*	-0.046
	(-2.79)	(6.89)	(-1.52)	(-0.42)	(-1.19)	(-0.19)	(1.02)	(0.5)	(1.02)	(3.3)	(-2.18)	(-1.29)
dad_mediumoccup	0.005	-0.008	-0.023	0.025	-0.01	0.002	0.002	0.007	-0.006	0.081***	-0.060**	-0.015
	(0.26)	(-0.55)	(-1.46)	(1.5)	(-0.61)	(0.31)	(0.13)	(0.49)	(-0.26)	(5.13)	(-2.69)	(-0.75)
mother_professional	0.055	-0.018	0.015	-0.053	-0.007	0.009	-0.01	0.007	-0.006	0.091*	-0.101	0.016
	(1.89)	(-0.87)	(0.8)	(-1.84)	(-0.24)	(0.89)	(-0.45)	(0.3)	(-0.07)	(1.99)	(-1.33)	(0.18)
mother_nonprofessional	0.012	0.021	0.002	-0.036	0.025	0.016	0.013	-0.053*	-0.06	0.023	0.019	0.017
	(0.39)	(1.14)	(0.08)	(-1.18)	(0.79)	(1.54)	(0.48)	(-1.99)	(-1.72)	(1.14)	(0.64)	(0.6)
rural	-0.029	0.008	-0.040**	0.061***	0.044	0.001	-0.062**	0.017	-0.04	0.065***	-0.067**	0.042*
	(-1.48)	(-0.62)	(-2.74)	(-3.45)	(1.92)	(0.15)	(-3.09)	(0.92)	(-1.66)	(4.08)	(-3.09)	(2.14)
Governorate	Yes				Yes				Yes			

Note: ***, ** and * indicate significance at the 1%, 5% and 10% significance levels. The figures in brackets are Z-statistics. The results satisfy the IIA condition.

Table A.3   Wage estimates

Variable	Egypt	Jordan	Tunisia
age	-0.0219	0.438***	0.0395
	(-0.226)	(8.314)	(0.298)
agesq	0.00184	-0.00839***	-2.93e-05
	(0.826)	(-7.410)	(-0.0101)
experience	0.372**	0.0267	0.0314
	(2.286)	(0.525)	(0.346)
highschool	-0.121	0.165***	0.249
	(-0.670)	(3.631)	(1.629)
vocational	-0.282***	0.0915	
	(-2.623)	(1.549)	
intermediate	-0.133	0.269***	
	(-0.815)	(4.912)	
university	-0.175	0.383***	0.546***
	(-1.160)	(9.934)	(3.094)
female	-1.189**	-0.203***	-0.0234
	(-2.260)	(-5.101)	(-0.272)
rural	-0.0223	0.00189	-0.233***
	(-0.267)	(0.0449)	(-2.784)
_m1	0.565		
	(1.527)		
_m2	0.314		
	(0.511)		
_m3	-2.078***		
	(-2.762)		
_m4	-0.826		
	(-0.857)		
Constant	0.361	-1.610***	-0.0600
	(0.327)	(-2.681)	(-0.0399)
Governorate/Region	Yes***	Yes***	Yes***
N of Obs	1190	1437	476

Notes: ***, **, * indicate significance at the 1%, 5% and 10%, respectively. The figures in parentheses are standard errors. Note that in the BFG estimates, the standard errors are bootstrapped. The errors produced by the standard BFG command do not account for the two step nature of the procedure and are therefore not consistent. Bootstrapping resolves this problem.

Table A.4   Educational specialization of Egypt youth

Variable	Activity status allocation				Wages
	Salaried	**Self**	**Unemp**	**Not working**	
age	0.045	-0.029	0.022	-0.038	0.0570
	(0.93)	(-0.99)	-0.52	(-0.85)	(0.351)
agesq	-0.001	0.001	-0.001	0.000	-0.000264
	(-0.60)	(1.27)	(-0.79)	(0.54)	(-0.0785)
experience	0.112***	0.058***	-0.099**	-0.071*	-0.0409
	(4.05)	(4.11)	(-2.93)	(-2.02)	(-0.500)
gen_ed	-0.002	0.008	0.018	-0.023	0.147
	(-0.06)	(0.27)	(0.48)	(-0.55)	(0.964)
edu_ed	0.114	-0.006	0.083	-0.191**	-0.108
	(1.77)	(-0.12)	(1.79)	(-3.12)	(-0.488)
art_hum_ed	0.077	-0.011	0.064*	-0.131**	0.360**
	(1.76)	(-0.31)	(2.01)	(-3.21)	(2.401)
science_ed	-0.051	-0.006	0.034	0.023	-0.0660
	(-1.03)	(-0.18)	(0.90)	(0.50)	(-0.412)
eng_ed	0.005	0.012	-0.043*	0.026	0.0580
	(0.21)	(0.86)	(-2.09)	(1.18)	(0.778)
agro_ed	0.026	0.006	-0.025	-0.007	-0.0400
	(0.67)	(0.24)	(-0.66)	(-0.17)	(-0.326)
health_ed	0.370***	-0.067	-0.163*	-0.140*	0.562***
	(5.41)	(-0.90)	(-2.40)	(-2.17)	(3.425)
female	-0.313***	-0.091***	0.042**	0.363***	-0.231***
	(-17.08)	(-5.60)	(2.89)	(25.57)	(-2.622)
dad_professional	-0.019	0.049***	-0.005	-0.025	
	(-0.82)	(3.40)	(-0.27)	(-1.13)	
dad_mediumoccup	0.013	-0.02	-0.018	0.025	
	(0.52)	(-1.14)	(-0.80)	(1.09)	
mother_professional	0.096**	-0.039	0.050*	-0.107***	
	(3.06)	(-1.72)	(2.03)	(-3.34)	
mother_nonprofessional	0.02	0.035	-0.001	-0.054	
	(0.45)	(1.48)	(-0.04)	(-1.29)	
rural	-0.016	0.007	-0.054**	0.063**	-0.0309
	(-0.66)	(0.49)	(-2.62)	(2.74)	(-0.377)
Constant					0.528
					(0.271)
Governorate	Yes***				Yes***
N Observations	3222				1190

Notes: ***, **, * indicate significance at the 1%, 5% and 10%, respectively. The figures in parentheses are standard errors. Note that in the BFG estimates, the standard errors are bootstrapped. The errors produced by the standard BFG command do not account for the two step nature of the procedure and are therefore not consistent. Bootstrapping resolves this problem.

Annex II. Description of variables used

Variable	Description
Ln Hourly Wages	The logarithm of net paid income per hour
Age	Respondent's age
Experience	Dummy=1 if the respondent obtained any work experience while studying
Highschool	Dummy=1 if the respondent has completed general secondary education
Vocational	Dummy=1 if the respondent has completed vocational training
Intermediate	Dummy=1 if the respondent has completed intermediate diploma
University	Dummy=1 if the respondent has completed university education
Gen_ed	Dummy=1 if the specialisation of respondent's completed education is general
Edu_ed	Dummy=1 if the specialisation of respondent's completed education is in education studies
Art_hum_ed	Dummy=1 if the specialisation of respondent's completed education is in arts and humanities
Science_ed	Dummy=1 if the specialisation of respondent's completed education is in natural sciences
Eng_ed	Dummy=1 if the specialisation of respondent's completed education is in engineering
Agro_ed	Dummy=1 if the specialisation of respondent's completed education is in agricultural studies/agronomy
Health_ed	Dummy=1 if the specialisation of respondent's completed education is in health studies
Female	Dummy=1 if the respondent is female
Dad_professional	Father's profession is in professional categories: 1-4 in the ISCO-08 group definitions
Dad_middleoccup	Father's profession is in medium occupational categories: 4-7 in the ISCO-08 group definitions
Mother_highskill	Mother's profession is in professional categories: 1-4 in the ISCO-08 group definitions
Mother_lowskill	Mother's profession is in non-professional categories: 1-9629 in the ISCO-08 group definitions

Note: Occupation groupings are based on ISCO-08 as coded by the survey implementation teams.