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Employment and skill mismatch among youth in Lebanon

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Abstract

Purpose – Employment and skill mismatch among youth constitute a major obstacle for access to the job market in the MENA region. This paper explores factors explaining employment and the perception of the skill mismatch problem among the youth in Lebanon using a novel dataset covering young people aged from 15 to 29. The paper provides a set of empirical insights that help in the design of public policy targeting school-to-work transition.

Methodology/approach – We control for a rich set of youth and household characteristics to jointly estimate the probability of being employed and the likelihood of reporting a skill mismatch problem. The empirical analysis uses a bivariate probit model where the first equation estimates the employment status, while the second estimates the determinants of skill mismatch perceptions. The bivariate probit model considers the error terms in both equations to be correlated and the model tests for such a correlation. We estimate the model recursively by controlling for the employment dummy variable in the skill mismatch equation since employed youth could be more or less likely to perceive the skill mismatch. The estimation is conducted first over the whole sample of youth, and then it is implemented by gender and region.

Findings – We find that youth employment is mainly correlated with age, being male, being single, having received vocational training and financial support from parents, living with parents, and receiving current education. The skill mismatch perceptions are mainly driven by being male, being single, having received post-secondary education, and belonging to upper and middle social classes. We also find that employability level and skill mismatch problems are jointly determined in the labor market for males and in the core region only.

Originality/value – Our paper covers a country that is neglected in the literature on the employment-skill mismatch nexus in the context of school-to-work transition. The study also uses a novel dataset focusing on youth. Our paper contributes to our understanding of the school-to-work transition in particular and to the youth-to-adulthood transition in general.

Keywords – Employment; Skill mismatch; Youth; School-to-work transition; Bivariate probit model

Paper type – Research paper

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1. Introduction

Skill mismatch has been identified to impose a significance drag on economic growth and employment across the Middle East and North Africa (MENA), a region that has a large youthful population compared to other economic regions (Bhattacharya and Wolde, 2012; Fasih and Ghazalian, 2015). The skill mismatch problem arises when there is a divergence between the educational attainment of workers and the skill requirements of prospective jobs (Kiker et al., 1997). Moreover, employability is commonly related to a number of labor supply-side constraints or attributes, which adversely affect the ability of new young job entrants to find jobs in a timely fashion (Fugate et al., 2004). These constraints relate to socio-economic characteristics of youth (e.g. age, gender, education, class), and regional specificities (Pool and Sewell, 2007).

In the context of MENA economies, the labor market in Lebanon represents an interesting case on the potential implications of skill mismatch problems on youth transition from school to work. In Lebanon, higher education institutions produce a large number of graduates that are not absorbed by the labor market (OECD, 2015) and the proportion of the young working in jobs that do not correspond to their educational backgrounds is significant. In this respect, only 40% of graduates work in jobs that match their qualifications while 20% of those work in non-matching occupations (Kawar and Tzannatos, 2013). Furthermore, ethnographic evidence suggests that a large number of Lebanese youth are pursuing careers that are unrelated to their academic studies (National Case Study, NCS, SAHWA Project, 2016).¹

Such a state of the labor market can have significant economic and social impacts. It has been shown that a sequential schooling system coupled with a fragile integration of educational systems and labor markets can result in possible “experience trap”, incompetent human capital formation, and protracted school-to-work transition (Floro and Pastore, 2016; Pastore, 2018).

The main purpose of our paper is to test the determinants of both employability and the skill mismatch problem amongst youth in Lebanon, which are assumed jointly determined in the labor market. The paper implements a bivariate probit model to jointly estimate the

¹ According to recent statistics from the International Labour Organization, the youth labor force participation rate in Lebanon remains among the lowest compared to MENA countries and to the rest of the world. It is observed that the youth labor force participation rate stands at 29% compared to 32% in the MENA region, and to 48% for the world. We also observe that the youth employment to population rate is the lowest compared to all other economic regions (Table 1).

probability of being employed and the likelihood of reporting a skill mismatch problem. Two equations are estimated; the first equation estimates the employment status, while the second estimates the determinants of skill mismatch perceptions. The bivariate probit model considers the error terms in both equations to be correlated and the model tests for such a correlation. We estimate the model recursively by controlling for the employment dummy variable in the skill mismatch equation since employed youth could be more or less likely to perceive the skill mismatch. The estimation controls for a number of relevant youth and household characteristics.

To the best of our knowledge, besides a number of policy reports (e.g. Robalino and Sayed, 2012), our work is the first empirical paper that examines this question in Lebanon. In this respect, our paper adds to the growing literature on school-to-work transition in developing countries and particularly in MENA countries (Angel-Urdinola and Semlali, 2010; Assaad and Krafft, 2014, Selwaness and Roushdy, 2019).

The paper is organized as follows. Section 2 summarizes the related literature on the employment-skill mismatch nexus, and work-to-school transition in developing countries. Section 3 presents the data, the main variables, summary statistics, and the empirical methodology. Section 4 discusses the empirical results. Finally, section 5 provides some concluding remarks.

2. Related literature

Factors affecting employability and skill mismatch have been studied in various labor market settings (Houston, 2005). The two problems constitute a significant constraint especially those young higher education graduates seeking to participate in the labor force. This constraint is especially acute in the MENA region that have seen a number of youth agitations during the period of the Arab Spring. Existing studies report variations across countries in factors affecting employability and in the perception of the skill mismatch problem. According to Fugate et al. (2004), employability reflects the set of attributes that lead to an active adaptation at the workplace. Among the attributes is a career identity that allows the worker to channel and enhance her active adaptation. Bradley and Devadason (2008) find that youth in Bristol, UK are subject to more frequent job rotations, periods of unemployment, and lower salaries. In terms of perception, the main finding is that youth perceived their job market difficulties as transitory. In this section, we provide a brief

overview of the related literature on the employment-skill mismatch nexus in the context of school-to-work transition.

2.1 Skill mismatch and education

Traditionally, the skill mismatch problem in the labor market has been examined from the prism of the Human Capital Theory (HCT), which defines human capital in terms of both formal education and practical skills. The extant literature is divided between proponents and opponents of the HCT (McGuinness, 2016). Proponents of the HCT argue that high youth unemployment compared to other age groups is due to inadequate human capital formation in terms of job-specific skills. Thus, the skill mismatch problem is transitory. However, opponents of this view argue that the widespread occurrence of persistent “over-education” among the youth sheds doubt on the plausibility of the HCT explanation.

Caroleo and Pastore (2016) present a thorough literature review on “over-education” in Europe. They note that, although most of existing literature underlines labor demand-side as the determinant of over-education, it is important to account for endogeneity of technical change triggered by the widening of skills supply. In this sense, labor mismatch is a transitory phase that fades as the economy grows and demand for skills is stimulated. Thus, they attribute over-education in Europe to the poor technological breakthroughs that hamper the skills absorption process. They also emphasize that youth exclusion is a result of the fragile integration of educational systems and labor markets; thus, leading to a protracted school-to-work transition. In the same vein, Caroleo and Pastore (2018), using data from Italy, find evidence that supports the standard HCT in terms of poor practical competencies among the youth, which leads to low quality human capital formation. According to the authors, over-education, which is related to socio-economic conditions and field of study of the individual, leads to such a low quality human capital when practical competencies are not developed. They also find that training programs ease the over-education’s negative implications. In addition, over-education is more widespread within the arts and social science realms than in the sciences. Thus, that the quality of education is found to be strongly correlated with skill mismatch (Pastore, 2014; McGuinness, 2016).

Pastore (2018) investigates the heterogeneity of youth unemployment across European countries. The author calls for looking beyond the common cyclicity of youth unemployment argument based on the principle of Last In, First Out (LIFO). He argues that a critical determinant of youth disadvantage lies in the unequal institutional structures that shape the school-to-work transition. Anglo-Saxon countries with dual educational systems (general and specific training) on average fare better than their Eastern and Southern European counterparts.

Kleibrink (2016) investigates the over-education phenomenon in Germany over the period 1991-2011. The results suggest that over-education is a problem of oversupply. Leuven and Oosterbeek (2011) examine the skill mismatch and over-education problems in the US labor market. They argue that the significant increase in the number of college graduates has brought a substantial decrease in return to education where both under-education and over-education have had a detrimental impact on the US wage structure.

In the MENA region, Assaad and Krafft (2017) argue that the low quality of human capital has negatively impacted the labor supply side in Egypt at a time where the labor demand was generating less desirable jobs. Angel-Urdinola and Semlali (2010) indicate that the overdependence on the informal sector for job creation results in substantial losses in human capital formation for youth in the MENA. Assaad et al. (2014) find that social status in the labor market still matters even after controlling for varying quality in the human capital of job market entrants.

In examining the school-to-work transition in developing countries, Manacorda et al. (2017) show that human capital heavily influences the transition's duration. Their results for the MENA region show that it suffers from higher transition durations more than any other economic region. Furthermore, gender plays a significant role with female transitions being longer than male transitions. The authors argue that the fundamental determinant of the school-to-work transition is education where flawed educational systems induce the skill mismatch problem.

Matsumoto and Elder (2010) refine the definition of school-to-work transition to account for the quality of jobs. Their work, based on ILO survey in developing countries, including Egypt and Syria, broaden the analysis of "fixed-term employment" to include two criteria: "decency" in terms of a permanent contract and "self-satisfaction" in terms of meeting aspirations. The key findings indicate that a majority of youth have not completed the

transition to work. Urban males aged 25 to 29 with secondary level education are at most advantage, whereas, young urban females are most disadvantaged. For Egypt they find a prolonged five-years transition period. Interestingly, they show that the young, obtaining jobs through educational or training institutions and public employment services, have a higher probability on average to have a successful transition.

Angel-Urdinola and Semlali (2010) provide a descriptive analysis on youth unemployment in Egypt over the period 1998-2006. They argue that unemployment rate remains to be high, particularly among youth entering the labor market the first time. Relying on a World Bank micro-data, the authors find significant improvements in workers' educational attainment. This improvement, nevertheless, did not translate into higher employability, signaling an exacerbating skill mismatch problem among youth. In fact, the main findings of the paper empirically corroborate the detrimental effect of not equipping university students with market oriented skills, making them merely unemployable and subjecting them to severe skill mismatch problem, lending further support to the quality of education argument of Pastore (2014) and others.

Finally, using panel data in 1998 and 2006, Assaad and Krafft (2014) adopt a life-course approach to disentangle the entwined links shaping the youth transition in Egypt, namely school, work and marriage. The authors distinguish between the traditional life (defined by early dropouts, marriage or immediate work especially in family businesses) and modern life (defined by extended education to upper secondary level and beyond, formal employment, later marriage, extended unemployment). Youth are classified based on their educational attainment and socioeconomic background. They find that youth aspiring for a modern life are more prone to face challenges pertaining to gender (women may choose to be inactive) and social class (some cannot afford modern life). They conclude that educational attainment seems to be constrained by social class and gender.

2.2 Skill mismatch and perceptions

Empirical studies on skill mismatch commonly distinguish between workers and firms' perceptions. On the worker side, a real mismatch between skills and requirements results in wasted resources, which leads to workers' dissatisfaction according to Tsang (1987) and to a high propensity to change jobs according to McGoldrick and Robst (1996). These nefarious effects result in lower profits for the firms (e.g. Groot, 1993) and in lower productivity for the workers (Belfield, 2000). Bender and Heywood (2009), using panel data for Ph.D. holders in

the US, find that being married and having a professional experience are important determinants for the skill mismatch perception for males but not for females. Lassibille et al. (2001) use data from Spain to study the transition from school to work. They find that youth with higher educational attainment are less likely to report a skill mismatch problem. In addition, these youths have a shorter period of unemployment. However, Badillo-Amador and Vila (2013) find contradictory results where skill mismatch was weakly associated with the educational level in Spain. They also find that the mismatch problem is negatively correlated with wages. Al-Harhi (2011) reports evidence on the skill mismatch perception amongst the youth in the MENA. He finds that Omani students are more satisfied about their university curricula than their Egyptian counterparts.

On the firm side, Almeida and Aterido (2011) argue that, mostly in developing countries, mismatches between job requirements and workers' skills are one of the main hurdles that lower growth and productivity of firms. Skill mismatch also negatively affects the hiring decisions of firms, which increase unemployment rates and the costs of production (e.g. O'Sullivan et al., 2011 for the MENA region). The mismatch also increases turnover rates (e.g. Hersch, 1991 for the US case). It also increases with firm size (Gelb et al., 2007; Kaplan and Pathania, 2010). Hallward-Driemeier and Aterido (2009), utilizing firm-level data from 105 countries, report that firms, which are in the export sector, are more likely to report a skill mismatch problem. Clarke (2010) confirms these results using data on firms from South Africa who perceive labor skill shortages as a major obstacle to business formation. Lyon et al. (2012), using data from 25 developing countries, report that larger firms are more likely to find the skill mismatch as a major obstacle to production and growth. Along the same lines, Gelb et al. (2007) indicate that, in sub-Saharan Africa, skill shortages are perceived to be a major obstacle for larger firms and for more technologically advanced employers. Fakhri and Ghazalian (2015) examine firms' perceptions on labor regulations and skills shortages in the MENA region. They find, however, that the perception of skill mismatch decreases in the firm size. They also find evidence of heterogeneity in perceptions across industries and countries.

3. Methodology

3.1 Data

We use a novel micro dataset on Lebanon; the SAHWA Youth Survey (2016), which is a nationally representative survey of 2,000 youth aged between 15 and 29 years old.² The SAHWA Youth Survey is a comprehensive survey that covers all administrative regions of Lebanon. The survey is constructed by dividing the regions into strata that ensures a proper representation of the youth population in each geographic unit. The survey covers household and youth characteristics such as household assets, dwelling characteristics, parent's education and employment, education, labor market, social relationships, religion, political engagement, culture and values and migration. Finally, it is worth mentioning that it adopts a multi-stage probability sampling procedure to ensure a random, representative sample for identifying households and main respondents. This survey was also conducted in four other Arab Mediterranean countries: Egypt, Tunisia, Algeria, and Morocco.

3.2 Variable definitions

In order to estimate jointly the probability of being employed and the likelihood of reporting a skill mismatch problem, we implement a model with two binary dependent variables. The first variable takes the value one if the youth is employed and zero otherwise. This variable reflects actual employment, which we use as a proxy for employability. The second variable is defined to be equal to one if the respondents report that their education did not prepare them for the labor market and zero otherwise³. This variable captures the perception of skill mismatch⁴.

The explanatory variables cover a number of household and youth characteristics. Youth characteristics include the youth age in years; a binary variable that equals one if the young respondent is a male and zero otherwise; education is defined through four binary variables that are equal to one when the youth has acquired no education or primary, middle, secondary, and post-secondary education, respectively, and zero otherwise. We include a binary variable equal to one when the youth has received vocational training and zero otherwise. A binary variable is added in the employment equation only when the youth is

² The SAWHA Project brought together a consortium of 15 partners, universities and research centers from Europe and Arab countries to research youth prospects and perspectives in a context of multiple transitions led by the Barcelona Centre for International Affairs (CIDOB).

³ In the SAHWA Youth Survey (2016), the question representing the skill mismatch perception is the following: "Do you think your studies prepare you/have prepared you for the labour market?". This question encompasses both general and vocational education.

⁴ The use of a perception-based variable can be seen as an alternative to objective measures of the skill-mismatch problem when such data is unavailable. The use of perception variables, in general, could be related to measurement errors in the data. In some contexts, using such perception measures can be desirable if used to capture changes in the work environment (Glaeser et al., 2004).

currently receiving education. We also include a binary variable for public school attendance. In addition, a binary variable is defined to equal to one if the youth declares that, compared to people of his/her age, he/she is in the middle class or upper income category. Another binary variable is used to control for financial support received from parents. This variable is defined to capture the amount of money received to cover the youth personal needs. We also include a binary variable for the youth who live with their parents.

For the youth household characteristics, we include four variables. First, following Assaad and Krafft (2017) and Assaad et al. (2017), we control for father's education through two binary variables, one for having secondary education and the other for post-secondary education with the reference group being below secondary⁵. Second, we include mother's education that is measured in the same manner as the father's education. Third, we control for the household size defined by the number of people in the household or the family size. Fourth, we control for dwelling type: apartment or other. Fifth, we create a dummy variable indicating whether or not the respondent has a capitalist parent. This variable equals to one if the father is both self-employed and an employer of others.

The explanatory variables also include eight regional variables capturing the geographical distribution of respondents. The nature of the residence area of the respondent is an additional variable that is captured by a binary variable that is equal to one when the residence is located in an urban setting and zero otherwise.

3.3. Summary statistics

Table 2 shows the percentage of sampled youth by characteristic. It lists the profile of employed youth and those who report a skill mismatch problem. Around 65% of those who are employed are male, while 62% are single. We also notice that around 36% of those employed went to a public school. Interestingly, none of the employed youth declared that they currently receive financial support from parents. Figures for those who report a skill mismatch problem show more variability. Of those, around 49% are male, while 75% are single. By contrast, around 52% of those suffering from a skill mismatch are receiving financial support from their parents. Finally, we observe for both categories that the bulk hail from the core region (Beirut and Mount Lebanon).

⁵ The social class variable reported by the youth and father's education level are weakly correlated (0.1615). As such, taking father's education as a sole proxy for social class omits important information about the social class of the respondent.

Table 3 presents the descriptive statistics of the variables for the whole sample, by gender and by region respectively. For the dependent variables, we observe that the average employability in our dataset is around 34% for the whole sample. Figures by gender show substantial difference between male (44%) and female (24%) respondents. However, when comparing between core and periphery regions, we notice only minor discrepancy between the two regions with 31% for the core and 38% for the periphery. For the skill mismatch variable, the majority of respondents (92%) report that the mismatch problem is an issue. Interestingly, comparing this variable by gender and region we detect several variations. In the core region 98% report a skill mismatch problem while 84% do so in the peripheral regions.

In the independent variables, the youth characteristics show an equal distribution between male and female in the sample. The result of the summary statistics shows that the average age in the sample is 22 years old, while around 75% of youth are single. However, the proportion of single males is greater than single females as can be seen in Table 3. With respect to educational attainment, around 38% of youth have higher education with a small variation by region and by gender. Interestingly, youth with primary educational level constitute the smallest group with an average of 5% in the whole sample, 6% for males, 3% for females, 3% in the core region, and 6% in the peripheral regions. We also observe that around 50% of youth attended public schools, yet this percentage is higher in the core region (60%) compared to 36% in the periphery. Moreover, we notice that 35% of youth respondents reported that they belong to the upper and middle income classes. The summary statistics results also show that 50% of the youth received financial support from parents. Finally, we find that 67% of youth live with their parents.

Turning to household characteristics, we observe that the percentage of fathers with below secondary education is 56%, while it is equal to around 44% in the core region and 72% in the periphery. Thus, the bulk of fathers belong to this educational category. The same trend is observed for mothers' education. We also notice that the average number of people living in the household is equal to four and around 64% of youth live in apartments. Finally, around 9% of youth have a capitalist parent.

Finally, we observe that the majority of youth (46%) reside in Mount Lebanon, which is part of the core region, followed by the north (11%) and south regions (10%), which are part of the periphery regions, and finally, Beirut (10%). In addition, we observe that around 77% of youth live in urban areas.

3.4 Econometric model

As already mentioned, the objective of this paper is to study the determinants of youth employability and labor market skill mismatch. To do so we use a limited dependent variable model (bivariate probit).

Let E_i represent a binary variable equal to one if the youth is employed and zero otherwise for respondent $i = \{1, \dots, I\}$. Also, let M_i be a binary variable equal to one if the youth reports a skill mismatch problem. Variables E_i and M_i are observed since they indicate a decision or assertion made by the youth regarding employment and skill mismatch. These binary variables capture the benefits from being employed (E_i^*) and the costs resulting from the skill mismatch problems (M_i^*) that are actually not observed by the researcher. The variable E_i^* and M_i^* are defined as latent variables and not observed in the data; they can be represented as follows:

$$E_i^* = Y_i \alpha^E + H_i \beta^E + u_i^E, \quad (1)$$

$$M_i^* = Y_i \alpha^M + H_i \beta^M + \delta E_i^M + u_i^M, \quad (2)$$

With the following probit rules:

$$E_i = \begin{cases} 1 & \text{if } E_i^* \geq 0 \\ 0 & \text{if } E_i^* < 0 \end{cases} \quad (3)$$

$$M_i = \begin{cases} 1 & \text{if } M_i^* \geq 0 \\ 0 & \text{if } M_i^* < 0 \end{cases} \quad (4)$$

In equations (1) and (2), Y_i is a vector of variables representing youth characteristics, H_i is the vector of variables representing household characteristics where the youth resides, and u_i is the error term. The vectors α^E , β^E , α^M , and β^M represent the vector of parameters to be estimated. Equations (1) and (2) can be estimated using the univariate probit model. However, such a model might produce biased estimators if the error terms include unobservable characteristics that influence jointly the dependent variables. Therefore, we use the bivariate probit model instead, which allows the error terms in equations (1) and (2) to be correlated in the estimation, where the dependent variables are jointly determined. Moreover, following Semykina and Wooldridge (2010), we estimate the model recursively by

controlling for the employment dummy variable in the skill mismatch equation (2) since employed youth could be more or less likely to perceive the skill mismatch. In this respect, the recursive two-equation model allows the binary dependent variable defined in equation (1) to be an endogenous variable in equation (2), which allows for the generation of consistent results as compared to the pure bivariate model (see Filippini et al., 2018). We also assume that the error terms are normally distributed ($u_i^E \sim N(0,1)$, $u_i^M \sim N(0,1)$) and jointly determined with $corr(u_i^E, u_i^M) = \rho$.

4. Empirical results and discussion

Table 4 reports the empirical results from the main estimation, which includes the whole sample as the benchmark case ($N = 2000$). For robustness, Table 5 reports again the recursive bivariate probit results by gender ($N_{male} = 1,005$, $N_{female} = 995$) while Table 6 reports them by region ($N_{core} = 1,124$, $N_{periphery} = 876$). It should be noted that in the three tables, columns (i) and (ii) are for the probability that youth is employed ($\Pr(E = 1)$) and the probability that youth perceive a skill mismatch problem ($\Pr(M = 1)$), respectively. We control for seven regional dummy variables in columns (i) and (ii) in Table 4 and in columns (i)-(iv) in Table 5. The regions are Mount Lebanon, South, Nabatieh, North, Akkar, Bekaa, and Baalbek, while the reference group is Beirut (the capital city).

In our empirical analysis, we estimate the correlation parameter ρ in order to determine whether there is a correlation between the error terms across equations (1) and (2) in tables 4, 5, and 6. We use the Wald test to determine the statistical significance of the correlation. We test if the null hypothesis indicating the absence of any significant correlation between the error terms should be rejected against the alternative hypothesis indicating the presence of a significant correlation. Therefore, if we reject the null hypothesis, we can conclude that employability and skill mismatch are jointly determined in the youth labor market and that the joint determination of both dependent variables in equation (1) and (2) is relevant.

Looking at the results of the Wald test, we find no evidence of the rejection of the null hypothesis in Table 4 for the main results. However, the results of the Wald test in Table 5, which reports the estimates by gender, are significant only for males. We also reject the null hypothesis of no correlation for the core region in Table 6. Hence, the recursive structure of the bivariate probit model is only relevant for males and the core region. Taken together,

these results suggest that employability and skill mismatch problems are jointly determined in the labor market for males and in the core region only.

The results also show that the log pseudo-likelihood number is higher for the model with regional dummies as can be seen in Table 4 indicating a better explanatory power for specifications that account for regional effects. When comparing the log pseudo-likelihood levels between genders in Table 5, we find that it is significantly higher for males, indicating a better explanatory power for the independent variables in the model for the male subsample. Finally, when comparing the log pseudo-likelihood levels between the two regions in Table 6, we find that it is significantly higher in the core region, indicating a better explanatory power for the independent variables in the model of core region. Next, we discuss the results of the statistically significant variables starting with youth characteristics drawing on the results from Table 4, 5, and 6.

4.1. Youth characteristics

Age

The results reveal that age is an important determinant of employability but not of the skill mismatch problem (Table 4). Indeed, we find that employability is increasing in age at the 1% level of statistical significance in all specifications by gender and by region (Tables 5 and 6). This result is in line with evidence from labor economics indicating that access to labor markets and related benefits are strongly related to age. For instance, Kleibrink (2016) finds that youth in Germany delay entry into the labor force during poor macroeconomic episodes, while Roushdy and Selwaness (2017) find that age is significant for access to social security in Egypt. One explanation for the lack of a relationship between age and skill mismatch perception could be due to presence of an inverted U-shaped relationship between age and skill mismatch perception for the labor force (age 15 to 65) as shown by Albiol Sanchez et al. (2015) using data from the European Union.

Gender

We also find that being male increases the likelihood of employability but it decreases the perception of suffering from a skill mismatch in the full sample (Table 4) and in both the core and periphery region (Table 6). Both effects are statistically significant at the 1% level. The effect of gender is found to be similar across the two regions. This indicates that males are more likely to be employed compared to females at the 1% significance level. This finding is related to gender norms in the MENA region where men act as “breadwinners”, while women

assume the bulk of domestic responsibilities (Assaad et al., 2017). It is plausible that such gender differences are due to the higher likelihood of males to engage in informal employment in the MENA region (Assaad and Krafft, 2014). Taken together, the results on gender reinforce the evidence from the MENA on youth to adulthood transition that is shaped mainly by gender and education (Angel-Urdinola and Semlali, 2010).

Marital status

Single youth are more likely to be employed and to perceive a skill mismatch problem. These likelihoods are significant at 1% and 5% levels of significance, respectively in Table 4. Looking at gender in Table 5, we find that being single increases the probability of perceiving a skill mismatch for males, however it increases the probability of being employed for females. This interesting result points out to possible discrimination against married women in the labor market and to related prevailing gender norms in the MENA region (Assaad et al., 2017). Our regional analysis in Table 6 indicates that being single is positively correlated with the likelihood of being employed in the two regions, while it is positively correlated with the skill mismatch only in the core region at the 1% significance level. In this respect, Assaad and Krafft (2014) report that singlehood leads to a delay in the transition from youth to adulthood in Egypt, which in turn results in a myriad of frustrations. It is therefore likely that similar frustrations in Lebanon push single youth to find themselves more ill-prepared for job market.

Education

Turning to educational attainment in Table 4, we find that having a middle school level of education is not a significant determinant of employability and of the perception of a skill mismatch compared to youth with no education or primary education (our reference group). However, young people with a secondary education level are less likely to be employed at the 1% significance level. Youth with post-secondary education are, in contrast, more likely to perceive a skill mismatch problem. In Table 5, we find similar results for middle school education. While males with secondary education are more likely to be employed at the 1% significance level, males with post-secondary education are less likely to be employed and more likely to perceive a skill mismatch problem compared to the reference group of primary or no education. Our results in Table 6 also indicate that having a secondary education in the periphery region decreases employability and increases the perception of a skill mismatch.

Interestingly, having a post-secondary education increases the likelihood of perceiving a skill-mismatch problem in the two regions.

We also find that youth with vocational training are more likely to be employed at the 1% significance level. This result is also observed for males in Table 5. However, youth with vocational training in the core region are more likely to report a skill-mismatch problem, while those in the periphery region are more likely to be employed with both significant at the 1% level.

Having found that the likelihood of perceiving a skill mismatch problem in Lebanon increases generally in the level of education, we can conclude that education raises job market expectations and with it perceptions of inadequacy and misfit in the job market. This result is in line with those reported by Angel-Urdinola and Semlali (2010) for Egypt. The quality of higher education might also be a factor in Lebanon given that the country witnessed the proliferation of a large number of universities that lack skills-orientated training programs. Thus, low quality human capital formation might be at play in Lebanon as is the case in Italy as reported by Caroleo and Pastore (2018).

The implication of education for youth skill mismatch in Lebanon can be also related to recent evidence in the country showing that university education increases the probability to emigrate (Dibeh et al., 2018). This evidence may suggest that emigration might be a coping mechanism to overcome such labor market problems, chiefly the perception of skill mismatch and misaligned expectations.

Finally, the lack of evidence that education in Lebanon increases the chances of youth to be employed reflects a different scenario than the case of Egypt where having secondary or post-secondary education was considered to guarantee for youth an employment in the public sector (Assaad, 2009). Thus education induces the Lebanese youth to emigrate from the country (among other functions) instead of directly helping them to get an employment (Dibeh et al., 2018).

Social class

At first view, the implications of social class (upper and middle income social class) for employability and skill mismatch do not exhibit any statistical significance for the full sample as seen in Table 4. However, when looking into gender in Table 5 we notice a salient difference. Males from middle and upper social class declare a lower perception of skill mismatch than their lower class counterparts. However, females from middle and upper class

have a higher perception of skill mismatch than their lower class counterparts. Moreover, as can be seen in Table 6, upper and middle class youth living in the core region have a lower perception of skill mismatch than their lower class counterparts, while those living in the periphery have the opposite perception.

The lack of statistical significance of social class on employability contradicts evidence from the region suggesting that social class rations job allocations in Egypt (Assaad and Krafft, 2014; Assaad et al., 2014). This result seems to indicate that, in Lebanon, two students hailing from different socio-economic backgrounds (social class and parents' wealth) may face similar labor market conditions in terms of employment. Nevertheless, gender and region still matter for the perception of skill mismatch across social class and the transition from youth to adulthood (e.g. Egyptian case, Assaad and Krafft, 2017). Given the concentration of industry and services in the core region, Lebanese youth from higher classes express a greater inadequacy in terms of labor skills. This can be explained by the gap between their upper and middle class aspirations and the economic structure of their region.

Financial support from parents⁶

The results in Table 4 show that youth receiving financial support from their parents are less likely to be employed at the 1% significance level, while the effect of this variable on the skill mismatch problem is not statistically significant, and these results also hold for both the core and periphery regions as seen in Table 6. This result is in line with well-established evidence suggesting that increasing family income reduces the incentives to participate in the labor market (Imbens et al., 2001; Wang and Ge, 2018). Moreover, financial support received from parents is negatively correlated with youth employability at the 1% significance level for both females and males as seen in Table 5. However, financial support received from parents is positively correlated with the skill mismatch problem albeit only for males. In this respect, our results show strong evidence of downward solidarity (parents to children) in Lebanon. This reinforces earlier evidence on family solidarity from Lebanon (see Fakhri and Marrouch, 2014).

Living with parents

⁶ The unique nature of our dataset allows us to control for this variable that is not considered in the extant literature on employability and skill mismatch.

We find that youth living with their parents are more likely to be employed at the 1% level of significance as seen in Table 4. This result also holds for both the core and periphery estimations in Table 6. However, the gender regression (Table 5) reveals that only females living with their parents have a higher likelihood of employability while this result is not significant for males. Thus, co-residence with parents is a salient feature for youth labor market outcomes as demonstrated by Kaplan (2009), albeit in a different context, for American youth. Looking at both our results on financial support from parents and co-residence, one may conclude that family support is a main determinant of employability in Lebanon.

Employed and current education

In order to understand the implications of employability for the skill-mismatch perception, we control for employment in the skill-mismatch equation. We find no effect in the full sample (Table 4). However, the gender regression reveals that only employed males are more likely to suffer from a skill mismatch problem (Table 5), while employed youth living in the core region are less likely to do so (Table 6). This mixed evidence highlights the complex relationship between employability and skill-mismatch (Houston, 2005). For instance, employability may increase the perception of skill-mismatch if there is a misalignment between skills of the worker and the skills that firms demand.

Moving into the effects of current ongoing education in the employment equation, the results indicate a strong positive and significant effects. This is consistent with human capital theory that education increases the probability to be employed. However, these results should be taken with caution when it is compared with the education level of youth.

4.2. Household characteristics and residence area

Moving to household characteristics, the results suggest that mother's education plays an important role in explaining employability of youth in Lebanon (Table 4). We find that having mothers with secondary education reduces the employability of youth. This is also true for females (Table 5) and the periphery region (Table 6). We also find that having a capitalist parent increases the employability of youth, but it is statistically significant for males and in the core region only (Table 6). These latter results could be related to the conditions of social reproduction in Lebanese society as wealthy fathers pass along their businesses to their male offspring. Finally, we find that youth living in apartments are less likely to be employed (Table 4). However, the result is not statistically significant for the

skill mismatch problem. Furthermore, Table 5 reveals that this variable has a negative and significant impact on the employability of females but not for males. Table 6 also reveals a negative and significant impact of this variable on employability in the periphery region.

The main effects of the variable urban residence are found in the regression by gender in Table 5. We find that a female living in an urban setting is less likely to report a skill mismatch problem at the 1% significance level, while there are no gender differences in the probability of being employed across rural and urban areas. These results could be related to the informality that is well spread in the MENA region mainly in rural areas, which affects the labor market structure (Angel-Urdinola and Semlali, 2010).

5. Concluding remarks

Employment and skill mismatch amongst the youth constitute a major obstacle for access to the job market, particularly in the MENA region where the divergence between the education and matching employment outcomes is pronounced and coupled with very high youth unemployment rates. This paper explores empirically the perception of Lebanese youth on whether or not the educational system and the labor market are compatible in Lebanon. Thus, this paper contributes to our understanding of the school-to-work transition in particular and to the youth-to-adulthood transition in general.

In the empirical model, we control for a rich set of youth and household characteristics to jointly estimate the probability of being employed and the likelihood of reporting a skill mismatch problem. This examination is based on a bivariate probit model that takes into account that these two problems are jointly determined in the labor market. The empirical analysis is carried out for the whole sample first, and then it is repeated by region and gender.

Our results are threefold. First, youth employment is mainly correlated with age, being male, being single, having received vocational training and financial support from parents, living with parents, and receiving current education. These findings may suggest that occupation of employed youth might be a relevant variable, however our data does not allow us to control for that effect. Second, skill mismatch perceptions are mainly driven by being male, being single, having received post-secondary education, and belonging to upper and middle social classes. Finally, we find that the recursive structure of the bivariate probit model is only relevant for males and the core region.

These empirical findings provide some insights to policymakers, in Lebanon and possibly the MENA region. First, the joint determination of employability and skill mismatch perception differs markedly across gender lines. The fact that only males perceive the two issues to be jointly determined indicates that the labor market conditions for males differ from those for females in Lebanon. Labor policies should be tailored according to these gender differences in labor market outcomes. Second, we observe that the youth profile most likely to suffer from a skill mismatch problem in Lebanon is also the profile of the most frustrated citizens in the MENA region mainly being young, single and educated.⁷ This finding points out to the need of MENA countries to improve their understanding of labor market conditions to better design policies that enhance social cohesion and stem the tide of recurrent upheavals. Third, our results could also be understood in the wider context of social malaise as reflected by the region's slow transition from youth to adulthood (Strachan, 2015; OECD, 2016) and its low quality of education (Assaad and Krafft, 2014). In this respect, the problem of low quality education can be addressed, according to Pastore (2018), through a better integration of educational systems with labor markets, a more flexible labor market (e.g. temporary contracts), and proactive training schemes. Interestingly, Robalino and Sayed (2012) show that in the case of Lebanon, students who graduated from top private universities are more likely to find jobs that are characterized by a better fit of skills.

Finally, it is worth mentioning that the slow transition related to skill mismatch could lead to a reduction in job seekers' efforts (Belfield, 2000). Such an effect has also a significant implication in the MENA region where growth was far from being 'inclusive' in the past decades (Nabli and Arezki, 2012). In this context, labor markets can also be affected by the prevailing economic structures where low productivity sectors do not generate sufficient job opportunities especially for the highly educated and skilled laborers. Moreover, the employment in these sectors, which is also predominated by informality, leads to low-wage traps and low returns to education in Lebanon (Kawar and Tzannatos, 2013).

⁷ A case in point is the self-immolating young Tunisian, Mohamed Bouazizi, who reacted to the confiscation of his ambulant vegetables business in December 2010. Bouazizi was indeed a young single male with higher education and his death is widely considered to have been the trigger of the 'Arab Spring' (Anderson, 2011).

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Table 1: Youth labor market indicators by economic region (averages, 2005-2015)

	Youth labor force participation rate	Youth to adult unemployment rate	Youth employment to population ratio
Lebanon	29.1	5.2	22.9
Middle East	31.4	3.7	23.2
North Africa	34.0	3.5	24.7
World	48.5	2.9	42.3
OECD countries	48.4	2.5	40.7
East Asia	55.7	2.9	50.3
South-East Asia and the Pacific	52.9	5.4	45.3
South Asia	42.6	3.8	38.4
Latin America and the Caribbean	52.9	2.9	45.3
Sub-Saharan Africa	54.3	2.0	47.7

Source: Key Indicators of the Labour Market (KILM) 2015 of the International Labour Organization.

Table 2: Percentage of youth by characteristic

Variable	Who are employed	Who report skill mismatch
Is male	64.73	48.65
Is single	61.97	75.01
Has no education/primary education	7.55	2.86
Has middle school education	23.08	21.03
Has secondary school education	26.42	35.80
Has post-secondary education	42.96	40.31
Went to public school	36.22	51.51
Is upper middle class	30.04	36.35
Received financial support from parents	0.00	52.17
<i>Youth are from:</i>		
Akkar	5.66	5.13
Baalbek	4.79	6.77
Beqaa	7.84	8.17
Beirut	8.27	9.68
North	12.63	8.63
South	11.18	9.22
Mount Lebanon	43.54	46.67
Nabatieh	6.10	5.72
<i>Number of observations</i>	2,000	

Table 3: Descriptive statistics of variables used in the analysis

	Benchmark		Gender				Region			
	μ	σ	Male		Female		Core		Periphery	
Dependent variables	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
Employability	0.344	0.475	0.444	0.497	0.244	0.430	0.318	0.466	0.379	0.485
Skill mismatch	0.919	0.273	0.891	0.311	0.946	0.225	0.979	0.142	0.840	0.367
Independent variables										
<i>Youth characteristics</i>										
Age: years	21.708	4.681	21.403	4.672	22.016	4.672	21.427	4.809	22.068	4.488
Gender: male	0.502	0.500			0.000	0.000	0.490	0.500	0.518	0.500
Marital status: single	0.745	0.436	0.835	0.372	0.654	0.476	0.749	0.434	0.740	0.439
Education: no education/primary	0.045	0.208	0.059	0.235	0.032	0.177	0.032	0.176	0.063	0.243
Education: middle	0.220	0.414	0.243	0.429	0.197	0.398	0.214	0.410	0.228	0.420
Education: secondary	0.352	0.478	0.323	0.468	0.381	0.486	0.361	0.481	0.340	0.474
Education: post-secondary	0.383	0.486	0.375	0.484	0.390	0.488	0.393	0.489	0.369	0.483
Vocational training	0.035	0.183	0.044	0.205	0.026	0.160	0.019	0.135	0.056	0.230
Current education	0.493	0.500	0.516	0.500	0.472	0.499	0.545	0.498	0.429	0.495
School type: public	0.496	0.500	0.513	0.500	0.479	0.500	0.604	0.489	0.356	0.479
Social class: upper & middle	0.347	0.476	0.351	0.478	0.344	0.475	0.368	0.483	0.321	0.467
Financial support from parents	0.500	0.500	0.494	0.500	0.507	0.500	0.553	0.497	0.432	0.496
Living with parents	0.669	0.471	0.753	0.431	0.590	0.492	0.681	0.466	0.661	0.474
<i>Household characteristics</i>										
Father's education: below secondary	0.558	0.497	0.560	0.497	0.560	0.497	0.436	0.496	0.719	0.450
Father's education: secondary	0.282	0.450	0.283	0.450	0.283	0.451	0.368	0.483	0.174	0.379
Father's education: post-secondary	0.156	0.363	0.156	0.363	0.157	0.364	0.195	0.396	0.107	0.310
Mother's education: below secondary	0.538	0.499	0.544	0.498	0.537	0.499	0.446	0.497	0.662	0.473
Mother's education: secondary	0.331	0.471	0.325	0.469	0.340	0.474	0.422	0.494	0.218	0.413
Mother's education: post-secondary	0.126	0.332	0.130	0.337	0.124	0.329	0.133	0.339	0.120	0.325
Household size: number of people	4.091	1.493	4.155	1.529	4.026	1.455	3.845	1.290	4.406	1.668
Dwelling type: apartment	0.638	0.481	0.627	0.484	0.654	0.476	0.699	0.459	0.565	0.496
Capitalist parents	0.086	0.281	0.087	0.281	0.086	0.281	0.093	0.290	0.079	0.270
<i>Regional characteristics</i>										
Akkar	0.047	0.212	0.049	0.215	0.046	0.210				
Baalbek	0.054	0.227	0.053	0.224	0.056	0.231				
Bekaa	0.055	0.229	0.051	0.220	0.060	0.238				
Beirut (capital city)	0.096	0.294	0.084	0.277	0.109	0.311				
North	0.112	0.316	0.120	0.326	0.105	0.306				
South	0.099	0.299	0.108	0.311	0.090	0.287				

Table 4: Benchmark results (Bivariate probit)

	(i)	(ii)	(iii)	(iv)
	Pr(E=1)	Pr(M=1)	Pr(E=1)	Pr(M=1)
<i>Youth characteristics</i>				
Age: years	0.164*** (0.017)	0.010 (0.021)	0.167*** (0.017)	0.010 (0.020)
Gender: male	1.161*** (0.107)	-0.430*** (0.135)	1.153*** (0.108)	-0.469*** (0.125)
Marital status: single	0.481*** (0.128)	0.389** (0.161)	0.497*** (0.126)	0.293** (0.145)
Education: middle	-0.030 (0.255)	0.031 (0.205)	-0.062 (0.253)	0.200 (0.186)
Education: secondary	-0.483* (0.258)	0.114 (0.213)	-0.501* (0.257)	0.312 (0.195)
Education: post-secondary	-0.196 (0.277)	0.618*** (0.226)	-0.200 (0.272)	0.609*** (0.206)
Vocational training	0.780*** (0.255)	0.295 (0.235)	0.764*** (0.253)	-0.031 (0.213)
School type: public	0.060 (0.122)	-0.010 (0.120)	0.058 (0.120)	0.148 (0.111)
Social class: upper & middle	0.090 (0.124)	0.057 (0.130)	0.077 (0.123)	0.138 (0.115)
Financial support from parents	-8.549*** (0.243)	-0.253 (0.279)	-8.091*** (0.262)	-0.086 (0.290)
Living with parents	0.609*** (0.148)	-0.270 (0.174)	0.632*** (0.146)	-0.219 (0.160)
Employed		-0.249 (0.348)		0.050 (0.349)
Current education	0.988*** (0.195)		0.932*** (0.199)	
<i>Household characteristics</i>				
Father's education: secondary	-0.077 (0.141)	0.220 (0.160)	-0.058 (0.139)	0.328** (0.151)
Father's education: post-secondary	0.089 (0.235)	-0.119 (0.193)	0.045 (0.228)	0.058 (0.187)
Mother's education: secondary	-0.353** (0.144)	-0.047 (0.143)	-0.317** (0.142)	0.034 (0.139)
Mother's education: post-secondary	0.016 (0.228)	0.199 (0.217)	0.012 (0.221)	0.044 (0.208)
Household size: number of people	-0.034 (0.039)	-0.035 (0.037)	-0.047 (0.037)	-0.116*** (0.033)
Dwelling type: Apartment	-0.289** (0.115)	-0.163 (0.111)	-0.249** (0.110)	-0.161 (0.099)
Capitalist parents	0.238 (0.219)	0.134 (0.234)	0.172 (0.215)	0.035 (0.187)
<i>Residence area</i>				
Urban	0.244* (0.133)	-0.096 (0.117)	0.196 (0.129)	-0.005 (0.111)
<i>Region</i>				
	Yes	Yes	No	No
<i>N</i>	2000	2000	2000	2000

ρ	0.101	-0.128
	(0.212)	(0.450)
<i>Wald test (chi2)</i>	0.226	0.079
<i>p-Value</i>	(0.634)	(0.777)
<i>Log pseudo-likelihood</i>	-796.495	-874.585

Note: E, employability and M, skill mismatch. No education/Primary is the reference group for education. Below secondary is the reference group for both father and mother education. Statistical significance: *=10%; **=5%; ***=1%. Robust standard errors are in parentheses.

Table 5: Results by gender (Bivariate probit)

	Male		Female	
	(i)	(ii)	(iii)	(iv)
	Pr(E=1)	Pr(M=1)	Pr(E=1)	Pr(M=1)
<i>Youth characteristics</i>				
Age: years	0.354*** (0.069)	-0.023 (0.024)	0.130*** (0.022)	0.020 (0.031)
Marital status: single	-0.558 (0.348)	0.476** (0.186)	0.696*** (0.166)	0.289 (0.285)
Education: middle	-0.113 (0.720)	0.103 (0.252)	-0.032 (0.400)	-0.156 (0.414)
Education: secondary	-1.501* (0.795)	0.254 (0.260)	-0.305 (0.398)	-0.125 (0.424)
Education: post-secondary	-2.949*** (1.009)	1.042*** (0.280)	0.507 (0.405)	0.115 (0.446)
Vocational training	6.141*** (0.312)	0.089 (0.268)	0.484 (0.349)	0.764 (0.471)
School type: public	-0.250 (0.205)	0.016 (0.151)	0.201 (0.162)	0.076 (0.188)
Social class: upper & middle	-0.007 (0.245)	-0.299* (0.164)	0.120 (0.157)	0.604** (0.265)
Financial support from parents	-15.194*** (0.717)	1.096*** (0.396)	-7.878*** (0.420)	-0.312 (0.402)
Living with parents	0.071 (0.256)	-0.150 (0.198)	0.713*** (0.216)	-0.441 (0.322)
Employed		1.388*** (0.431)		-0.039 (0.608)
Current education	1.044*** (0.286)		1.136*** (0.292)	
<i>Household characteristics</i>				
Father's education: secondary	-0.121 (0.249)	0.205 (0.197)	-0.087 (0.184)	0.254 (0.280)
Father's education: post-secondary	-0.244 (0.395)	-0.242 (0.232)	0.178 (0.296)	0.299 (0.328)
Mother's education: secondary	0.168 (0.226)	-0.090 (0.184)	-0.370* (0.191)	0.154 (0.252)
Mother's education: post-secondary	0.159 (0.348)	0.457* (0.240)	-0.099 (0.313)	-0.244 (0.330)
Household size: number of people	0.151* (0.084)	-0.051 (0.049)	-0.040 (0.058)	-0.190 (0.288)
Dwelling type: Apartment	0.069 (0.259)	-0.216 (0.137)	-0.312** (0.155)	-0.020 (0.055)
Capitalist parents	1.255** (0.505)	0.147 (0.347)	-0.022 (0.284)	-0.136 (0.191)
<i>Residence area</i>				
Urban	-0.093 (0.286)	0.013 (0.148)	0.149 (0.176)	-0.356* (0.201)
<i>Region</i>	Yes	Yes	Yes	Yes
<i>N</i>	1,005	1,005	995	995
ρ	-0.923***		0.180	

<i>Wald test (chi2)</i>	(0.188)	(0.384)
<i>p-Value</i>	1.592	0.211
	(0.207)	(0.645)
<i>Log pseudo-likelihood</i>	-318.460	-384.306

Note: E, employability and M, skill mismatch. No education/Primary is the reference group for education. Below secondary is the reference group for both father and mother education. Statistical significance: *=10%; **=5%; ***=1%. Robust standard errors are in parentheses.

Table 6: Results by region (Bivariate probit)

	Core region		Periphery region	
	(i)	(ii)	(iii)	(iv)
	Pr(E=1)	Pr(M=1)	Pr(E=1)	Pr(M=1)
<i>Youth characteristics</i>				
Age: years	0.135*** (0.025)	0.017 (0.035)	0.197*** (0.025)	0.027 (0.025)
Gender: male	1.244*** (0.153)	-0.585 (0.424)	1.038*** (0.160)	-0.399*** (0.142)
Marital status: single	0.543*** (0.162)	0.904*** (0.314)	0.518** (0.218)	0.054 (0.198)
Education: middle	0.075 (0.384)	-0.333 (0.549)	-0.294 (0.342)	0.307 (0.227)
Education: secondary	-0.365 (0.389)	-0.538 (0.557)	-0.683* (0.349)	0.558** (0.242)
Education: post-secondary	-0.072 (0.424)	6.286*** (0.976)	-0.543 (0.367)	0.612** (0.251)
Vocational training	0.830 (0.519)	6.287*** (0.577)	0.819*** (0.315)	0.074 (0.237)
School type: public	0.055 (0.181)	-0.028 (0.262)	0.004 (0.174)	0.040 (0.128)
Social class: upper & middle	0.210 (0.175)	-0.876*** (0.318)	-0.081 (0.179)	0.390*** (0.140)
Financial support from parents	-8.119*** (0.260)	-0.740 (0.713)	-8.483*** (0.385)	-0.141 (0.294)
Living with parents	0.309* (0.180)	-0.624 (0.408)	0.849*** (0.252)	-0.020 (0.195)
Employed		-1.217* (0.713)		0.026 (0.379)
Current education	1.978*** (0.557)		0.927*** (0.213)	
<i>Household characteristics</i>				
Father's education: secondary	-0.116 (0.187)	-0.002 (0.318)	-0.038 (0.226)	0.179 (0.186)
Father's education: post-secondary	0.385 (0.384)	-0.077 (0.414)	-0.096 (0.319)	-0.186 (0.210)
Mother's education: secondary	-0.178 (0.192)	-0.199 (0.343)	-0.477** (0.226)	-0.012 (0.167)
Mother's education: post-secondary	-0.399 (0.399)	0.517 (0.471)	0.234 (0.288)	0.151 (0.226)
Household size: number of people	0.014 (0.064)	-0.098 (0.110)	-0.073 (0.048)	-0.059 (0.036)
Dwelling type: Apartment	-0.201 (0.167)	-0.536** (0.272)	-0.384** (0.159)	-0.247** (0.118)
Capitalist parents	0.798* (0.437)	-0.273 (0.393)	-0.079 (0.275)	0.206 (0.233)
<i>N</i>	1124	1124	876	876
ρ		0.501** (0.292)		-0.044 (0.238)
<i>Wald test (chi2)</i>		1.985		0.034

<i>p-Value</i>	0.158	(0.852)
<i>Log pseudo-likelihood</i>	-272.993	-513.451

Note: E, employability and M, skill mismatch. Core region includes Beirut (the capital city) and adjacent Mount Lebanon. Periphery region includes South, Nabatieh, North, Akkar, Bekaa, and Baalbek. No education/Primary is the reference group for education. Below secondary is the reference group for both father and mother education. Statistical significance: *=10%; **=5%; ***=1%. Robust standard errors are in parentheses.

