Inequality of Opportunity in the Labor Market for Higher Education Graduates in Egypt and Jordan

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Abstract:
In the Middle East and North Africa, unequal opportunities occur in both the education system and the labor market. The outcomes that individuals achieve in the labor market depend on circumstances beyond their control, such as gender or parents' education, as well as the effort they expend in succeeding in the education system and in the labor market itself. The extent to which outcomes depend on circumstances outside an individual's control is typically referred to as inequality of opportunity. It could be that unequal opportunities in the labor market are due to unequal human capital (pre-market inequality) or, alternatively, to individuals being treated unequally in the labor market even after accounting for differences in their human capital (in-market inequality). This paper tests whether there is in-market inequality of opportunity in Egypt and Jordan, focusing on the labor market experiences of higher education graduates. Specifically, the paper examines whether a number of labor market outcomes are affected by circumstances, such as family background, gender, and place of birth, after carefully controlling for the type and quality of human capital an individual possesses. We find that substantial in-market inequality exists in both settings, but more so in Egypt, suggesting that the functioning of the labor market itself is a substantial source of inequality of opportunity.

Keywords: Higher education, Labor markets, Inequality of Opportunity, Private education, Egypt, Jordan

JEL Classifications: I23, H42, J2, J3, J64, J62, D63

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1 Introduction

In a well-functioning labor market, labor market outcomes differ across individuals because of the quality of their human capital and level of skill, as well as the work effort they expend. Likewise, when the education system is functioning well, the human capital and skills individuals accumulate should reflect differences in their effort in school. Therefore, in a country with both a well-functioning education system *and* a well-functioning labor market, labor market outcomes will reflect individual effort, some of which is embodied in the human capital and skills they possess. However, the education system and labor market could fail to properly allocate or reward human capital and skills, but instead allocate human capital and rewards on the basis of individuals' circumstances, such as their social class, their gender or where they live. While unequal outcomes related to effort are morally justifiable, unequal allocations on the basis of circumstances outside of an individual's control are morally unjustifiable, and can be termed inequality of opportunity (Roemer, 1998).

Access to high quality human capital and skills could very well be determined by a person's circumstances, like social class background and parental education, and thus may embody a great deal of inequality of opportunity. Education affected by circumstances represents pre-labor market inequality of opportunity. It could still be the case that, once human capital is accounted for, rewards in the labor market are otherwise unrelated to individuals' circumstances. However, if after correcting for the quantity and quality of human capital, an individual's circumstances still play a substantial role in his or her labor market outcomes, that could be evidence of imperfectly competitive labor markets in which family connections, social networks, and personal ties make a difference in access to jobs. This would be a case where there is in-labor market inequality of opportunity.

In the Middle East and North Africa (MENA), there are unequal opportunities to accumulate human capital. Inequality of opportunity is pervasive throughout the education system. There are pervasive inequalities of opportunity in educational attainment (Assaad, Salehi-Isfahani, & Hendy, 2014) as well as achievement, measured as scores on the TIMSS test (Salehi-Isfahani, Hassine, & Assaad, 2014). Egypt provides an example of the systematic patterns of unequal access to opportunities to accumulate human capital throughout the education system. Inequality of opportunity is substantial beginning even in pre-primary education (El-Kogali & Krafft, 2015; Krafft & El-Kogali, 2014) and at school entry (Elbadawy, 2015; Krafft, 2012). There is inequality of opportunity throughout basic and secondary education, and especially in accessing higher education (Assaad, 2013). There is even substantially inequality of opportunity *within* the higher education system in Egypt (Krafft, Elbadawy, & Assaad, 2013). These unequal chances to accumulate human capital will be pre-market factors contributing to inequality of opportunity within the labor market.

There is evidence of inequality of opportunity in MENA labor markets. Moderate inequality in household consumption is observed in the Arab countries (Bibi & Nabli, 2009). In Jordan and Egypt wage inequality includes substantial gender differentials (Said, 2014, 2015). Wages are known to be affected by parental education and location in Egypt (World Bank, 2012). Around a fifth of inequality in wages in Egypt is estimated to be inequality of opportunity, with father's background, geographic origins, and mother's education making substantial contributions

(Hassine, 2011). There is also inequality of opportunity in entering various occupations. Youth from lower socio-economic backgrounds have unequal access to high-level occupations (Binzel, 2011). Although inequality of opportunity in the labor market is clearly an issue, the roles of pre-market and in-market inequality have not been disentangled. Identifying whether in-market problems are contributing to inequality of opportunity is vital for determining whether the education system alone, or both the education system and labor market need to be reformed in order to provide equal opportunities.

By focusing on inequality in labor market outcomes while accounting for human capital, we can isolate if and how circumstances affect inequality in the labor market—i.e., whether there is in-market inequality of opportunity. Past research suggests that inequality of opportunity persists beyond human capital. For instance, parents' education has been shown to affect children's earnings even after controlling for children's own education in Egypt (Nugent & Saleh, 2009). Work on youth in Egypt, Jordan and Morocco distinguished between the contributions of education and age compared to circumstances beyond an individuals' control and found that more than half of explained inequality in employment, formal employment, public sector employment, permanent jobs, and high-wage jobs was due to circumstances (World Bank, 2013). Unequal access to occupations is related to personal networks (Binzel, 2011). Personal, kinship, and social networks play a particularly important role in accessing employment in the MENA region (Assaad, Krafft, & Salehi-Isfahani, 2014; Assaad, 1997). Labor markets are strongly segmented by kinship and socio-economic class, as well as along gender lines (Assaad, 1997; Barsoum, 2004; Hendy, 2015).

We make use of two unique data sets from Egypt and Jordan to test whether labor market outcomes are systematically affected by a person's circumstances after carefully controlling for the type and quality of human capital an individual possesses. The data sets come from surveys of higher education graduates in two fields of study – business and information technology – who were between the ages of 25 and 40. Limiting the fields to these two areas allows us to keep the type and quantity of human capital fairly constant. We also control for any remaining differences in human capital by having a wealth of information on the educational experience of the individual both before entering higher education as well as during his or her studies.

These detailed data on the educational trajectory of individuals allow us to control to a great extent for the quality of human capital investments and thus focus on the direct role of circumstances on labor market outcomes. By excluding and then including the additional educational variables from our models we can also examine the full impact of family circumstances on labor market outcomes and estimate the share of the effect that is transmitted indirectly through the human capital variables and the share that directly affects labor market outcomes. The labor market outcomes we examine are time to first job, wages in the first job, growth in wages over time, wages five years after graduation, current wages, and current job quality.

2 Methods

2.1 Inequality of Opportunity

To understand and decompose inequality, we turn to the substantial and growing body of literature discussing and applying the concept of inequality of opportunity. The work of Roemer (1998) is the cornerstone of this literature. Roemer divided inequality in outcomes into inequality due to effort (factors within an individual's control) and inequality due to circumstances (factors outside an individuals control). While inequality due to effort is morally justifiable, and indeed, economically desirable to incentivize effort, the inequality due to circumstances is not morally justified. That inequality due to circumstances is termed inequality of opportunity. Circumstances can include factors such as gender, place of birth, parents' socio-economic status, and other characteristics over which individuals have no control. When, for instance, females and males receive different wages for the same effort, this is a case of inequality of opportunity in the labor market.

2.2 Measuring Inequality

A variety of different labor market outcomes are considered in this paper. To measure inequality of opportunity for a given outcome y, such as income, we must first assess total inequality. Denote as $F(y)$ the cumulative distribution function. Then $F(y)=p$ is the proportion of the population with outcomes y or lower. Denote $Q(p)$ as a quantile function, the outcome level (for instance, income level) below which we can find p of the population. By definition, $F(Q(p))=p$. The quantile function, $Q(p)$, can also be interpreted as the outcome of an individual whose percentile in the population is p. For instance, the median outcome is $Q(0.5)$. Additionally, the mean is μ. Measuring inequality is essentially the task of quantifying the shape of the distribution $Q(p)$ (Duclos & Araar, 2006).

2.3 General Entropy Measures of Inequality

Our goal is to assess inequality of opportunity in labor market outcomes, and the shares (partial effects) attributable to different circumstances, such as family background. Quantifying the partial effects requires a decomposable inequality index. In this paper we use a general entropy (GE) index, the most common type of decomposable inequality measures (Ferreira & Gignoux, 2008).

For a continuous outcome variable, we primarily use the GE(0) index, which draws on the quantile function $Q(p)$ and can be described as (Duclos & Araar, 2006):

$$GE(0) = \int_0^1 ln\left(\frac{Q(p)}{\mu}\right) dp$$

The GE(0) index is more sensitive to values at the lower end of the distribution. It is also path independent, meaning that both the direct and residual methods of calculating inequality of

opportunity should generate the same results. We therefore use this inequality measure whenever possible.

In one case, because one of the outcomes we examine, wage growth, can be zero or negative, this rules out the GE(0) index. For this outcome we use the GE(2) index, which is half the square of the coefficient of variation, where the coefficient of variation is the standard deviation divided by the mean. This can be re-written as (Duclos & Araar, 2006):

$$GE(2) = \frac{1}{2}\left(\int_0^1 \left(\frac{Q(p)-\mu}{\mu}\right)^2 dp\right)$$

This functional form puts emphasis on inequality at the higher ends of the distribution.

2.4 *Decomposing Inequality*

In decomposing inequality, we wish to identify the amount of inequality attributable to circumstances, that is inequality of opportunity, as well as the amount attributable to specific different circumstances, the partial effects or shares. If there are *k* groups, where a group is a unique combination of circumstances, we can divide inequality into between group inequality, which is inequality of opportunity, and within group inequality, which we attribute to effort.

Inequality can thus be partitioned into within and between group inequality as:

$$GE(\theta) = \underbrace{\sum_{k=1}^{K} \phi(k)\left(\frac{\mu_k}{\mu}\right)^{\theta} GE(k;\theta)}_{Within} + \underbrace{\overline{GE}(\theta)}_{Between}$$

Denoting by $\phi(k)$ the proportion of the population in group *k*, μ_k as the mean labor market outcome of group *k*, and $GE(k;\theta)$ as the GE(θ) index of group *k*. Since $GE(k;\theta)$ is inequality for individuals with the same set of circumstances, it captures inequality within a group, and once groups are population weighted, captures within-group inequality on the population level. Between group inequality is then measured by $\overline{GE}(\theta)$, which is the GE index of the population if each member of group *k* experienced labor market outcome μ_k, their group's mean (Duclos & Araar, 2006).

2.5 *Quantifying Between Group Inequality*

Between group inequality, $\overline{GE}(\theta)$ can be quantified residually, relying on a standardized distribution. A standardized distribution is denoted v_i^k and is the distribution that results from replacing each y_i^k with $y_i^k \frac{\mu}{\mu^k}$, that is adjusting each group's distribution to have the same mean as the population mean. Then only within group differences remain and between group inequality can be calculated residually using $GE(\theta)$ as:

$$GE(\{y_i^k\}) - GE(\{v_i^k\})$$

This calculates between group inequality, inequality of opportunity, residually. It can also be transformed into a share of total inequality, as:

$$\theta_r = 1 - \frac{GE(\{v_i^k\})}{GE(\{y_i^k\})}$$

2.6 Parametric Methods for Estimation

Both parametric and non-parametric methods can be used for estimating inequality. Ideally, we would partition the population into *k* different unique combinations of circumstances. However, even accounting for a modest number of circumstances non-parametrically can rapidly become problematic in terms of having an adequate sample size. Just gender, three regions, urban/rural, three mother's education levels, three father's education levels, and three father's occupations requires 324 circumstance groups. Non-parametric methods also require discretizing continuous variables, such as test scores. Parametric methods are therefore preferable. We make parametric assumptions that outcome *y* depends on circumstances *C*:

$$y_i = C_i\psi + \varepsilon_i$$

As others have done (Bourguignon, Ferreira, & Menendez, 2007), in some cases we parameterize the dependent variable as *ln(y)* in the regression, as is common in specifying regression models for outcomes such as wages. However, inequality is still assessed in terms of the outcome *y* and standardized distributions of *y*, not *ln(y)*. We can estimate these equations parametrically with ordinary least squares (OLS).

The parametrically standardized distribution, $\hat{\tilde{y}}$ can then be generated by applying the estimated coefficients, $\hat{\psi}$, to mean circumstances $\bar{C}$ as (Ferreira & Gignoux, 2008):

$$\hat{\tilde{y}}_i = \bar{C}_i\hat{\psi} + \hat{\varepsilon}_i$$

After differences in circumstances have been neutralized, the residual inequality is within-group and can be subtracted from total inequality to get between group inequality, essentially replacing v_i^k with $\hat{\tilde{y}}_i$:

$$GE(\{y_i^k\}) - GE(\{\hat{\tilde{y}}_i\})$$

or as a share:

$$\theta_r = 1 - \frac{GE(\{\hat{\tilde{y}}_i\})}{GE(\{y_i^k\})}$$

2.7 Partial Effects for Different Circumstances

With the methods presented so far, we can demonstrate the extent of inequality of opportunity as between-group inequality, the inequality explained by the regression model. However, we are particularly interested in the roles of different circumstances, such as family background, in inequality. It is possible to isolate the effect of a particular circumstance, or set of circumstances, *J*, by estimating the counterfactual standardized distribution (Ferreira & Gignoux, 2008):

$$\hat{\tilde{y}}_i^J = \bar{C}^J\hat{\psi}^J + C_i^{j\neq J}\psi^{j\neq J} + \hat{u}_i$$

Then inequality attributable to *J* is (Ferreira & Gignoux, 2008):

$$GE\left(\{y_i^k\}\right) - GE\left(\{\hat{\tilde{y}}_i^J\}\right)$$

This inequality can then be expressed as a share of total inequality:

$$\theta_r = 1 - \frac{GE\left(\{\hat{\tilde{y}}_i^J\}\right)}{GE\left(\{y_i^k\}\right)}$$

The share or partial effect can be interpreted as the percentage of total inequality due to circumstance *J*.

2.8 Direct and Indirect Effects

An additional complication arises in disentangling efforts from circumstances in empirical data. For instance, test scores may reflect both individuals' efforts, in studying, and the socio-economic background of their parents. Schooling is often treated as an effort variable (World Bank, 2013), or as "effort" that may be influenced by circumstances (Bourguignon et al., 2007). Denote measured "efforts," such as test scores, as *E*. Then if measured efforts are influenced in part by circumstances, the relationship we wish to estimate becomes (Bourguignon et al., 2007):

$$y_i = C_i\alpha + E_i\beta + \lambda_i$$
$$E_i = HC_i + \eta_i$$

Where α and β are vectors of coefficients and *H* a matrix of coefficients for the different effort variables' relationship with circumstances. For the purposes of estimating inequality of opportunity, these models do not have to be estimated in full, but can be estimated in the reduced form as:

$$y_i = C_i(\alpha + \beta H) + \eta_i\beta + \lambda_i$$

which can be estimated as the earlier:

$$y_i = C_i\psi + \varepsilon_i$$

This reduced form approach to estimating inequality of opportunity gives both the direct and indirect impact of circumstances. The direct impact of circumstances after controlling for

observable effort (for instance, test scores) can be obtained after directly estimating (Bourguignon et al., 2007):

$$y_i = C_i\alpha + E_i\beta + \lambda_i$$

The direct effect of circumstances can then be computed by obtaining the partial effects for *C* or its components.

3 Data

3.1 Sample

Our data are designed to test whether labor market outcomes are significantly affected by a person's circumstances after carefully controlling for the type and quality of human capital an individual possesses. We examine and compare higher education graduates in two countries—Egypt and Jordan. The data sets come from surveys of higher education graduates in two fields of study – commerce (business) and information technology.[3] Limiting the fields to these two areas allows us to keep the type and quantity of human capital fairly constant. We also control for any remaining differences in human capital by having a wealth of information on the educational experience of individuals both before entering university as well as during their studies. The surveys sampled only individuals who were higher education graduates, between the ages of 25 and 40, in urban areas, and who had ever worked. The sources of our sample are the Labor Force Sample Survey in Egypt, and in Jordan the Employment and Unemployment Survey and Household Income and Expenditure Survey.

The surveys were fielded in 2012. The sample sizes of the surveys were 1,710 in Egypt and 1,539 in Jordan. However, we exclude some individuals from our analyses. In Egypt, we exclude those who went on to post-graduate education (as this is additional human capital that might affect labor market outcomes). In Jordan we exclude individuals who attended higher education outside of Jordan or who were not Jordanians. This yields a final sample of 1,616 for Egypt and 1,418 for Jordan.

3.2 Outcomes

We examine seven different outcomes: time to first job, wages in first job, wage growth, wages five years after graduation, current wages, current job quality, and a combination of current job wages and current job quality. These outcomes together track the key experiences of graduates as they enter and progress through the labor market, and also recognize the possibility of tradeoffs between different outcomes. For instance, individuals may accept a job with slightly lower wages in exchange for better job quality.

[3] Data are publicly available for research purposes through the Economic Research Forum (ERF) at www.erfdataportal.com as "Higher Education Graduates Survey."

Time to first job is measured in months from graduation until first employment. Individuals who immediately transition to work are treated as having a one-month transition. In the regressions, we use the natural log of time to first job. Wages in the first job are based on real wages in local currency terms, specifically Egyptian Pounds (LE) and Jordanian Dinar (JD). Wages are adjusted into real terms using each country's CPI, and are monthly. For the regressions and inequality decompositions we use the natural logarithm of wages. Annual wage growth is the annual percentage change in wages from the start of the first wage job until the current or last wage job. The annual rate of change is calculated as the natural logarithm of the ratio of the ending and starting wage divided by the time from starting wage work until the end of wage work (or current date if the individual was currently working). This is calculated only for individuals who spent at least one year in wage work. Wages five years after graduation are, like first wages, in real terms as a monthly salary. These are available only for individuals in wage work five years after graduation, and are regardless of whether an individual spent all that time in the labor market. If individuals were in the middle of a position five years after graduation, we use linear interpolation to calculate wages based on reported starting and final (or current) wages in the job.

Three different measures of current work are used as labor market outcomes. We look at current wages for those currently working at the time of the survey. As with the other wage outcomes, current wages are in real terms as monthly earnings. We also examine current job quality. We create an index of job quality, using rich information on job characteristics, benefits, responsibilities, and perceived satisfaction. The job quality variable is calculated based on a factor analysis (see Appendix 2). Additionally, we consider tradeoffs between current wages and job quality. Higher education graduates are likely to engage in public sector work, which may have lower pay but substantially better job conditions and benefits. In both Egypt and Jordan, there is evidence that youth are willing to trade off higher private sector pay for the better benefits in the public sector (Barsoum, 2015; Brown, Constant, Glick, & Grant, 2014). Previous studies in Egypt, for instance, have calculated the ratio of total benefits to wage benefits to be between 1.8 and 2.5 in the public sector (Assaad, 1999). Although we cannot calculate total benefits for our sample, we can consider job quality, including such benefits as social security. Since nonwage benefits may be traded off with wage benefits, we also standardize current wages and combine them with the standardized current job quality.

3.3 Characteristics: Circumstances and Effort

In assessing inequality, it is important to distinguish between inequality of opportunity, that is inequality related to circumstances outside of an individual's control, and inequality due to individuals' efforts. It is, however, quite difficult to disentangle circumstances from efforts. Test scores, for instance, can represent a mix of circumstances and efforts. Whether individuals have educated mothers who can help them study will affect their test scores, and is certainly a circumstance outside of their control, but the time and energy an individual herself dedicates to studying is effort. We therefore distinguish between characteristics that are pure circumstances, such as parents' education, and characteristics that are likely to be a mix of circumstances and efforts, such as test scores.

We consider individuals' family background, place of residence, and gender to be pure circumstance variables. Table 1 presents the categories and variables we consider. The data

includes a rich set of pre-labor market characteristics in regards to individuals' family background. We have information on father's and mother's education as well as father's employment status and occupation, all of which are categorical. We also have information on the home environment that is likely to reflect both wealth and support for education, including computer, internet, or magazines and books in the home at age fifteen. In terms of family background we also include the parents' age when the child was born and its square.

The contribution of gender is based on comparing females to males,[4] while the contributions of place of residence are based on covariates for country-specific governorates (the top-level administrative unit in both Egypt and Jordan). In calculating inequality of opportunity, we first model inequality under a "reduced form" specification, which includes only these pure circumstance variables of family background, place of residence (geography) and gender. This specification also controls for years of work experience (and its square) for current work outcomes. As others have done (Abras, Hoyos, Narayan, & Tiwari, 2013; Marrero & Rodríguez, 2013; World Bank, 2013), we do not consider the contributions of work experience to inequality to be inequality of opportunity. Work experience does affect labor market outcomes, so it should be controlled for, but different labor market outcomes based on work experience are not morally objectionable. Different labor market outcomes for individuals with different levels of work experience are economically desirable. Additionally, in the long run, individuals will experience a variety of levels of work experience and receive varying rewards in the labor market. Therefore, inequality related to work experience is considered morally acceptable and akin to effort.

We also consider, in a fuller specification, a number of covariates that are likely to be a mix of circumstance and effort variables. We consider individuals' basic schooling characteristics, secondary schooling and performance, higher education and performance, and the processes individuals experience during higher education. In terms of basic schooling, Kindergarten attendance and private basic education are considered. Whether secondary schooling was private and secondary specialization are considered, along with computer use in secondary. We consider the grade (test score) individuals receive in secondary, and interact that with specialization. In higher education, whether the program was private, selective, or an IT versus commerce program (and interactions between all of these) were considered, along with the final university grade (test score) and interactions with specialization and public/private. The language of instruction is also included. To measure processes in higher education that might affect the quality of human capital, we include factor variables[5] that measure the pedagogy, accountability, and perceived quality of higher education. Private schools, specializations, institution characteristics, and test scores are all likely to be the product of both circumstances and effort.

[4] Because we were concerned about two potential issues in regards to gender, namely the selection of females out of the labor market and that circumstances might affect males and females differently (that there were interactions with gender), we also tested running all of our inequality analyses with males only. The results were not substantively different, aside from the absence of a contribution to inequality of opportunity from gender.

[5] See Assaad, Badawy, and Krafft (2014) for a detailed discussion of the creation of the pedagogy, accountability, and perception of quality factors.

Table 1. Variable Categories

Category	Variables	Circumstances or Effort
Family Background	Father's Education, Mother's Education, Computer, Internet, or Magazines and Books in Home at Age 15, Father's Age at Birth (and square) or DK, Mother's Age at Birth (and square) or DK, Father's Employment Status	Circumstances
Gender	Female	Circumstances
Geography	Governorates (Country-specific)	Circumstances
Experience	Years of work experience (and square)	Effort
Basic Schooling	Kindergarten Attendance, Primary Private and Preparatory Private (Egypt), Basic Private (Jordan)	Both Circumstances and Effort
Secondary Schooling and Performance	Secondary Private, Secondary Specialization, Frequency of Computer Use in Secondary, Age Graduated Secondary, Secondary Grade and Square, Secondary Grade DK (Egypt), and interactions between grade and specialization.	Both Circumstances and Effort
Higher Education (HE) and Performance	Private, Selective, and IT and interactions; University Grade and Square; Interactions between University Grade, Square, IT and Private; Language of Instruction	Both Circumstances and Effort
HE Process Factors	Factors[6] for Pedagogy, Accountability, and Perceptions of Quality	Both Circumstances and Effort

4 Results

4.1 Labor Market Outcomes in Egypt in Jordan

Despite the homogeneity of education level and specialization in our study, we see substantial variation in the labor market outcomes of the graduates (Table 2). This variation indicates that there is substantial inequality in outcomes, but not whether it is caused by the labor market rewarding different efforts or different circumstances. The average time to first job is seven months in Egypt (standard deviation of 14) and nine months in Jordan (standard deviation of 16). In Egypt, mean wages in the first job were 1059 LE, and annual wage growth was 7.6%, but large standard deviations are observed around both of these outcomes, as with wage after five years (mean 1774 LE) and the current wage (mean 1377 LE). In Jordan, where the mean wage in first job is 342 JD and wage growth is 6.3%, the standard deviations around first wages and wage growth are relatively smaller. However, the standard deviation for wage after five years (mean 561 JD) is relatively larger than in Egypt, although current wages (mean 465 JD) have less dispersion.

[6] See Assaad, Badawy, and Krafft (2014) for a detailed discussion of the creation of the pedagogy, accountability, and perception of quality factors.

In terms of current job quality, since these factor variables have been standardized and transformed, their mean and standard deviation do not have an intuitive interpretation. One characteristic of the variable that combines current job wage and quality is notable; the standard deviation is around 1.5 for both Egypt and Jordan. Since this combines two variables with standard deviations around 1 (by construction), this indicates that wages and quality move together, but only in part.

Table 2. Summary Statistics for Labor Market Outcomes in Egypt and Jordan

	Time to First Job	Wage in First Job	Annual % Ch. in Wage	Wage after 5 Years	Current Wage	Current Job Quality	Current Job Wage & Quality
Egypt							
Mean	7.27	1059	7.57	1774	1377	5.43	6.92
Standard Deviation	14.34	923	20.93	1608	1017	0.99	1.54
N (Observations)	1605	1443	1175	751	1069	1135	1069
Jordan							
Mean	9.17	342	6.32	561	466	5.97	8.29
Standard Deviation	15.81	212	9.97	827	278	0.96	1.49
N (Observations)	1411	1389	1305	913	1264	1271	1264

Source: Authors' calculations based on the surveys of higher education graduates

4.2 Regressions

Before turning to the inequality measures and decompositions, we first examine the regressions that underlie the inequality decompositions. Table 3 presents joint tests for the significance of different categories of variables. Table 7 and Table 8 in Appendix 1 present the underlying regressions. Recall that the reduced form specification includes only pure circumstance variables, while the full specification adds variables that are likely to be a mix of effort and circumstances.

In Egypt and Jordan, family circumstances are insignificant or only marginally significant for time to first job, but gender always is significant and geography usually significant. None of the mixed circumstance and effort variable categories for education and performance are significant. Regressions for time to first job must be interpreted with some caution, since individuals may choose to undertake a longer job search in order to find a higher quality job, which will ultimately be a better labor market outcome. However, in general it looks like initial circumstances are playing a larger role than measurable efforts in time to first job.

Wages in the first job are systematically related to circumstances in both Egypt and Jordan; family background, gender, and geography are always significant. Adding in mixed circumstance and effort variables, secondary education and performance has a significant impact on first wages in both Egypt and Jordan, and basic education and higher education and performance also do so in Egypt, but higher education processes do not impact wages in the first job. Wage growth in Egypt is not significantly related to any characteristic except marginally to higher education processes, but in Jordan family background matters to some extent, as does geography, and

secondary characteristics performance. Both circumstances and observed efforts play a larger role in wage growth in Jordan than in Egypt.

Five years after graduation, wages are likely to provide a good picture of how circumstances affect wages in the long-term. Wages at this point are significantly related to all pure circumstances in both Egypt and Jordan, and at most weakly related to secondary or higher education characteristics and performance. Wages in the current job show a similar pattern, with family background, gender, and geography always significant. Additionally, in both countries secondary and higher education performance and characteristics are significant, and in Egypt basic education and higher education process are also significant. Experience is always significant for current wages.

Current job quality is strongly related to circumstances in Egypt, but only to geographic differences in Jordan. Experience, as expected, is significant. Secondary characteristics and performance are unrelated to job quality in Egypt, but are related in Jordan. Higher education performance and processes are significant in both countries. The same pattern holds for combined wages and job quality as for job quality alone for Egypt; in Jordan family background is significant in the reduced specification and gender in both specifications. Overall, it is clear that circumstances have a significant relationship with labor market outcomes even after accounting for human capital, and that measured efforts sometimes matter as well. We now examine the magnitude of the impact of circumstances, in terms of the extent of inequality of opportunity.

Table 3. Joint Significance Tests for Regressions

Outcome:	Time to First Job				Wage in First Job				Annual % Ch. in Wage				Wage in Job After Five Yrs.				Wage in Current Job				Current Job Quality				Current Job Wage & Quality			
Country:	Egypt		Jordan		Egypt		Jordan		Egypt		Jordan		Egypt		Jordan		Egypt		Jordan		Egypt		Jordan		Egypt		Jordan	
Specification:	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full	Red.	Full
Family Background			+		***	**	**	*			*	+	***	**	***	**	***	**	***	*	***	***			***	***	*	
Gender	***	***	***	***	***	***	***	***			+		***	***	***	***	***	***	***	***	*				*	**	***	***
Geography	**		***	***	***	***	***	***			***	**	***	***	*	+	***	***	*	*	***	***	***	***	***	***		
Experience	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	***	***	***	***	***	***	***	***	***	***	***	***
Basic Ed.						*												+				+				*		
Sec. Ed. & Perform						*		***				*		*		*		*		***				**				***
HE & Perform						*								*				*		***		**		*		***		**
HE Factors										+								*				**		*		*		

Source: Authors' calculations based on the surveys of higher education graduates

Notes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p<0.1$

Reduced specification does not include basic education, secondary education and performance, higher education and performance, or higher education processes (factors).

Joint tests of significance based on the regressions in Appendix 1.

4.3 Explained Inequality

Even for individuals with substantial similarities in their level and type of education, there is large inequality of opportunity in labor market outcomes, particularly in the long run. Figure 1 presents explained or between-group inequality as a share of total inequality for both Egypt and Jordan and for both the reduced form specification and the full specification. The exact quantities underlying this information are in Table 5 and Table 6. The reduced form specification can be interpreted as inequality of opportunity, while the full specification incorporates variables that are a mix of circumstances and efforts. Experience is controlled for in the current job outcomes in both specifications, but is not considered part of explained inequality.

Explained inequality is moderate for time to first job, from 11-15% of all inequality. Explained inequality increases only very slightly from the reduced to full specification, i.e. with the inclusion of basic, secondary, and higher education variables, including test scores. Looking at wages in the first job, in Egypt under the reduced form specification, 16.1% of inequality in wages in the first job is inequality of opportunity, while in Jordan it is lower at 12.1%. The full specification has somewhat higher shares, 21.7% of all inequality explained in Egypt and 19.2% in Jordan. Notably adding in measured efforts increases explained inequality only somewhat.

There is very limited explicable inequality in annual wage growth. Explained inequality is in fact insignificant for both specifications in Egypt, and is the only outcome for which this is the case. Explained inequality in wage growth is significant, although small in Jordan, at 6.2% in the reduced specification and 9.8% in the full specification. Although the explained inequality in wage growth is modest, if the advantages conferred by circumstances in the first job are similar to the advantages in wage growth, this will compound inequality as individuals spend more time in the labor market.

Explained inequality is quite high for wages five years after graduation, substantially more so than for wages in the first job. This means that the contribution of circumstances to inequality increases rather than decreases over time. In Egypt under the reduced form specification, circumstances explain 29.2% of inequality in wages five years after graduation. Almost a third of inequality in wages five years after graduation is inequality of opportunity in Egypt. In Jordan, the share is lower, 17.9%. The shares of explained inequality rise somewhat, 4-6 percentage points, with the full specification, which includes measured efforts that potentially mediate some circumstances as well. Although the amount of inequality explained increases with the addition of measurable effort, such as test scores, it is notable that the increase is relatively small. The contributions of (measured) effort pale in comparison to those of circumstances.

Current wage inequality is fairly similar in Egypt and Jordan. Explained inequality is 15-17 percent under the reduced specification and 23-26 percent under the full specification for both countries. That current wages are similarly unequal in these countries while wages in the first job and wages five years in are more unequal in Egypt is due to the fact that, on average, the sample in Egypt has been in the labor market for a shorter time than the sample in Jordan, so current wages represent different points along individuals' long-term labor market trajectories.

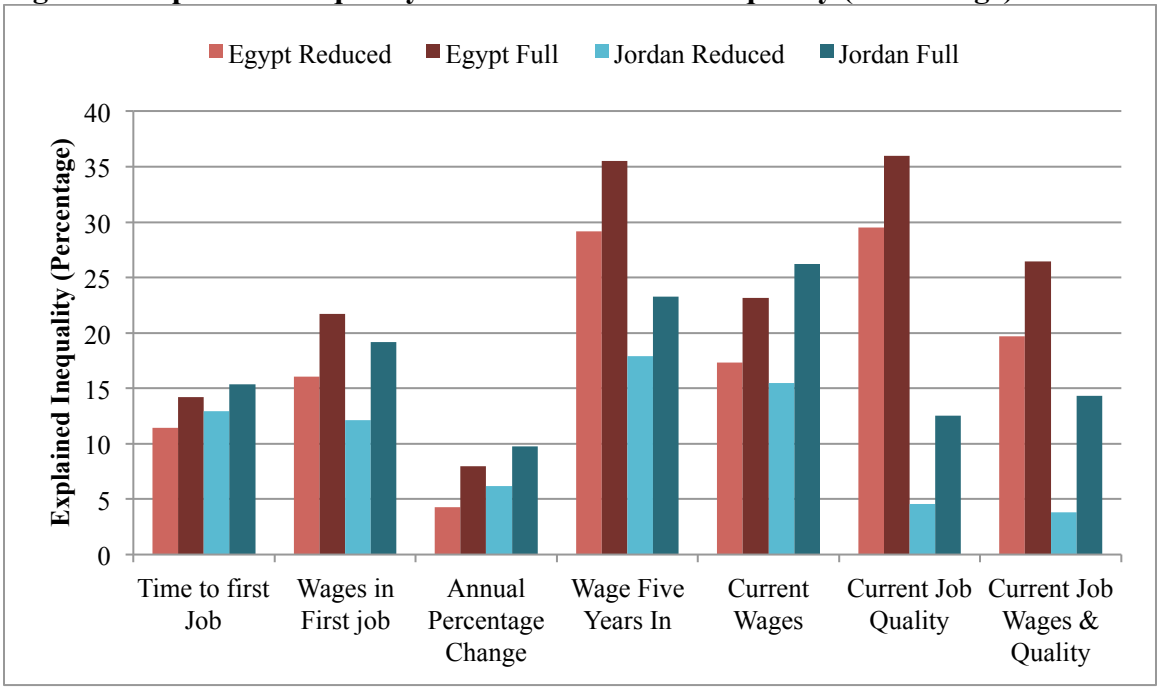
Current job quality shows large explained inequality in Egypt, but not in Jordan.[7] In Egypt, 29.5% of the inequality in job quality is inequality of opportunity under the reduced form specification, while in Jordan it is just 4.5%. Explained inequality shares rise to 36.0% (Egypt) and 12.5% (Jordan) with the addition of the variables in the full specification. In Egypt, job quality is substantially affected by circumstances, but in Jordan, circumstances matter only a little.

The variable that combines standardized current job wages and current job quality in equal shares shows substantially more inequality in Egypt (19.7%) than in Jordan (3.8%) under the reduced form specification, rising to 26.4% (Egypt) and 14.3% (Jordan) under the full specification. It is notable how much more, in both relative and absolute terms, the share of explained inequality increases from the reduced to full specification in Jordan. Either circumstances unmeasured but impacting education experiences matter more or measurable efforts contribute more to inequality in job quality in Jordan than in Egypt.

While in Egypt the combined outcome of current job wages and quality shows explained inequality between the explained inequality of the current wages and current job quality outcomes, in Jordan the level of inequality is actually slightly lower under the reduced specification and similar to current job quality under the full specification. This is likely due, in part, to how current wages and current job quality are related in Egypt and Jordan. In Egypt, current wages and current job quality have a stronger correlation than in Jordan, meaning that individuals are more likely to have a well-paying *and* high quality job in Egypt than in Jordan. Labor market entrants in Jordan face more of a tradeoff between either high-quality or well paying jobs, and circumstances may have counter-balancing effects on quality and wages in Jordan.

[7] To check the sensitivity of this finding to the fact that different factors were created for Egypt and Jordan, we also tested a factor based on pooling the data on job quality for both Egypt and Jordan. The results were quite similar with the pooled factor.

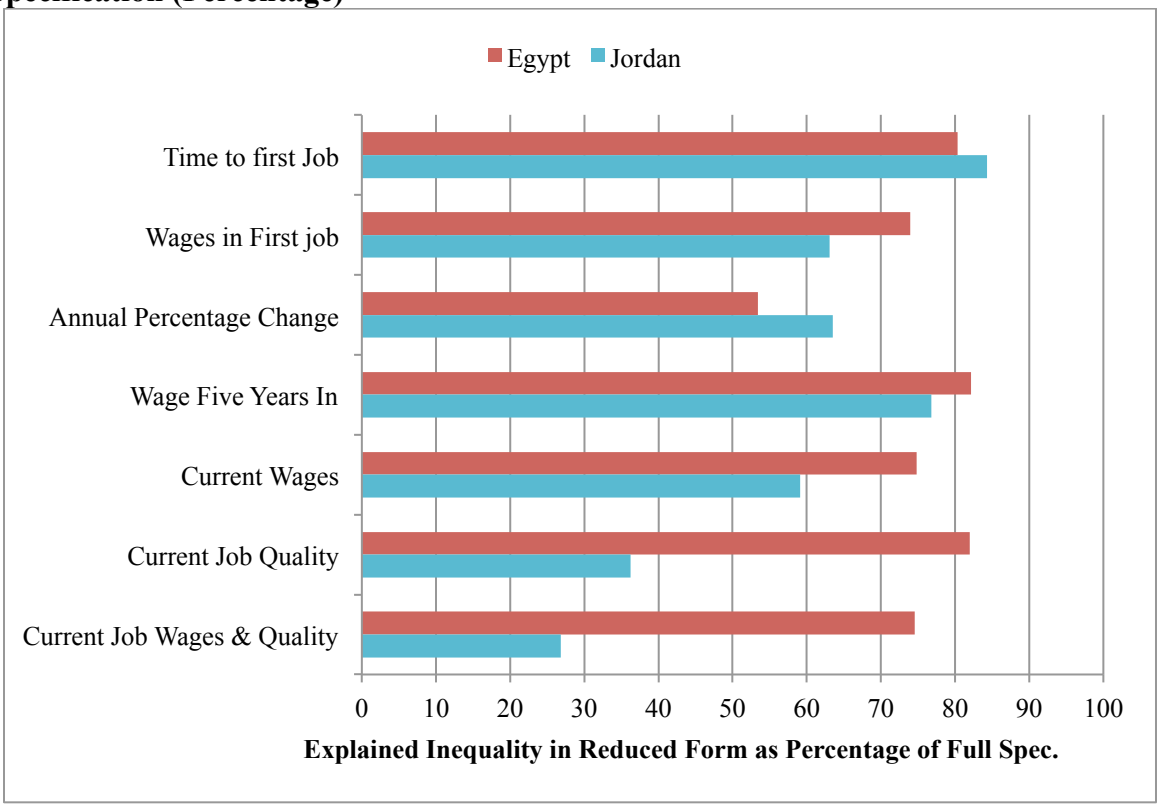
Figure 1. Explained Inequality as a Share of Total Inequality (Percentage)



Source: Authors' calculations based on the surveys of higher education graduates

One important finding about explained inequality is the fact that inequality of opportunity (explained inequality in the reduced specification) dominates explained inequality even in the full specification. This means inequality related to (measured) effort, as well as the indirect contributions of additional, unobserved circumstances through educational experiences, play only a small role in unequal rewards in the labor market. The dominance of inequality of opportunity is highlighted in Figure 2, which shows the explained inequality in the reduced form specification as a share of explained inequality in the full specification. For time to first job, wages in the first job, and wages after five years, the ratio of reduced to full specification is between 60-85 percent for both Egypt and Jordan. Looking at current job characteristics, while this high ratio remains in Egypt, it does not hold in Jordan, particularly for current job quality, for which reduced/full is just 36 percent. The relative contributions of educational experiences and efforts are much greater in Jordan for job quality. This suggests a more meritocratic labor market, at least in terms of job quality, in Jordan. In terms of wages in the first job, wages after five years, and current wages, Jordan also has a relatively greater share of explained inequality from mixed circumstance and effort variables than in Egypt. Overall, the inclusion of efforts, such as test scores, educational experiences and remaining differences in human capital usually explains only a small share of inequality, especially in comparison to that explained by circumstances alone.

Figure 2. Ratio of Explained Inequality in the Reduced Form Specification to the Full Specification (Percentage)



Source: Authors' calculations based on the surveys of higher education graduates

4.4 Circumstances Contributing to Inequality

A variety of different circumstances contribute substantially to inequality. Figure 3 and Figure 4 show the shares attributable to different circumstances for the seven labor market outcomes. Table 5 and Table 6 show the percentage of all inequality that is attributable to each particular set of characteristics. The figures specifically examine the shares attributable to circumstance variables—family background, gender, and geographic differences—in the reduced and full specifications. Although we know, from Figure 1 and Figure 2, that adding measurable efforts and controls for any remaining differences in human capital tends to only slightly increase explained inequality, it could be the case that efforts and additional human capital play a substantial mediating role in inequality of opportunity. That is, it could be the case that circumstances' contributions to inequality are mediated through (measured) efforts and differences in human capital. If this were the case, we would expect to see the shares of explained inequality related to circumstances to drop substantially once measured efforts and differences in human capital were included. This is not the case; circumstances make large, direct contributions to explained inequality.

Looking first at time to first job, the contributions of circumstances remain essentially constant comparing the reduced and full specifications, meaning circumstances directly affect time to first job. Gender makes the largest contributions to inequality in the time to first job in both Egypt and Jordan and in both the reduced and full specifications. Gender explains around 7% of

inequality in time to first job in Egypt and 5% in Jordan. This is consistent with females experiencing higher rates of unemployment, especially educated females in both countries (Assaad & Krafft, 2015a; Mryyan, 2014). Geographic differences and family background also make contributions, although geographic differences are statistically insignificant in Egypt. The contributions of family background are similar in both countries, but geographic differences contribute to a greater extent in Jordan. In Egypt in the full specification, secondary characteristics and performance make a small contribution, which is statistically significant.

Looking at wages in the first job for the reduced specification, in Egypt gender contributes the largest share (8.3% of all inequality), followed by family circumstances (4.6% of all inequality) and geographic differences (3.6% of inequality). All are statistically significant, and remain of similar magnitude in the full specification. In Jordan family circumstances make the greatest contribution to inequality, 5.5% of all inequality, in the reduced form specification, but this contribution is not statistically significant; only the contribution of gender (3.2% of all inequality) is significant in Jordan. Shares remain similar, although the contribution of family is slightly reduced, in the full specification for Jordan.

In Jordan in the full specification, the greatest contributor to explained inequality is secondary characteristics and performance, contributing a significant 6.6% to total inequality. In Egypt the equivalent share is 3.7% for the contributions of secondary characteristics and performance. This is the only additional characteristic that is significant in the full specification, and there are no other added characteristics that are significant (nor any changes in the significance of the circumstance categories). The comparison between the contributions of secondary experience and performance in Egypt and Jordan is telling; (measured) effort contributes nearly twice as much to inequality in Jordan as in Egypt. This could be because test scores are a better measure of effort or ability in Jordan than Egypt, but it also may be a sign of a more meritocratic labor market with greater rewards to effort in Jordan.

In Egypt, no contributions are statistically significant for the annual percentage change in wages, although family background has a share around 3%. Not even the overall regression model nor the effect of all circumstances (and efforts) together is significant in Egypt for either specification. In Jordan, family background and geographic differences contribute significantly to inequality in wage growth, but gender does not. Secondary characteristics and performance also contribute significantly to wage growth in the full specification, explaining around 3% of inequality in wage growth, a similar share to the contribution of family circumstances.

Wages after five years show large contributions from family background to inequality. In Egypt under the reduced form specification, 11.5% of inequality is attributable to family background. This drops to 9.6% in the full specification, suggesting a moderate share of family background is mediated through schooling variables. In Jordan, 11.3% of inequality in wages after five years is from family background in the reduced form specification, dropping to 10.4% in the full specification. In Egypt, gender also contributes substantially (9.5%) as do geographic differences (10%) under both specifications. The contributions of gender and geography are smaller in Jordan (3% for gender, 4% for geography). In the full specification, none of the added categories of variables significantly contribute to inequality in Jordan, although 5.0% of inequality is explained by secondary performance and experiences. In Egypt, higher education and higher

education performance contribute a significant 5.1% share. All the circumstance variables are significant in both Egypt and Jordan. Comparing the contributions of family background to those of measured efforts and considering their significance, in the long run, circumstances are rewarded, but rewards to measured efforts are small.

In Egypt, family circumstances make the greatest contribution to current wage inequality, 9.0% in the reduced form specification and 7.9% in the full specification. Gender contributes around 4% to both specifications, and geographic differences 5.4% in the reduced form specification, falling to 3.1% in the full specification. In Jordan, family circumstances contribute 6.4% to inequality, falling to 5.4% in the full specification. Gender contributes 6-7%, and geographic differences 2-3%. In both countries all circumstances are significant in the reduced specification, although geography is not in the full specification for Egypt. Only for Jordan is secondary performance and experience significant, contributing 8.5% to current wage inequality, along with a statistically insignificant 4.6% attributable to higher education experiences and performance. Notably, in current wages for Jordan, although measurable effort does not dominate the combined effect of the circumstance variables, it is greater than any individual category of circumstances, including family background. For current wages, the comparison between Egypt and Jordan is particularly notable; while both have substantial contributions from family characteristics, in Jordan there are also contributions from secondary and higher education experiences and performance, which may partially represent effort.

Current job quality shows very different patterns in Egypt and Jordan. In Egypt, family background contributes around 8% to job quality and geographic differences contribute around 20% to inequality in job quality. Both are significant, but gender is not. In Jordan, only geographic differences are significant, explaining 3% of differences in job quality. In the full specifications, in Jordan, secondary experience and performance and higher education experience and performance are also significant, explaining 3.0% (secondary) and 4.3% (higher education) of inequality in job quality. In Egypt secondary is not significant, but basic education is. Although basic education is a mix of circumstance and effort variables, it is likely to be more dominated by circumstances, suggesting an indirect effect of circumstances through basic education. Higher education experiences and performance are significant as well in Egypt, contributing 6.2% of inequality. Higher education factors (pedagogy, accountability, and perceptions of quality) also contribute significantly to inequality (5.9%) in job quality in Egypt. Looking at the regressions, this effect appears to be dominated by perceptions of quality. Since these questions were retrospective, it is possible that causality runs in the opposite directions; individuals who obtain high quality jobs then perceive their education more positively. It could also, however, be the case that individuals are perceiving genuine quality in their institution, and it is either providing them with additional skills that allow them to access higher quality jobs, or providing them with connections to those higher quality jobs.

In the combined current wages and current job quality outcome, in Egypt, both geographic differences and family background contribute substantially and significantly to inequality (8-9%). In Jordan, in the reduced specification, only gender contributes significantly, 1.7% to inequality. In the full specification in Jordan, secondary and higher education characteristics and performance are also significant, contributing 6.4% (secondary) and 4.5% (higher education) to inequality in current wages and job quality. In Egypt, basic, secondary, and both measures of

higher education also significant. Basic education contributes 3.2% of inequality, secondary 3.5%, higher education 5.2%, and higher education processes 4.5%. Over all the outcomes, the common pattern persists that the direct contributions of circumstances dominate, the indirect contributions are small, and measured effort matters more for Jordan than for Egypt.

Figure 3. Shares o f Inequality Attributable to Different Characteristics, by Labor Market Outcome and Characteristic, Egypt and Jordan

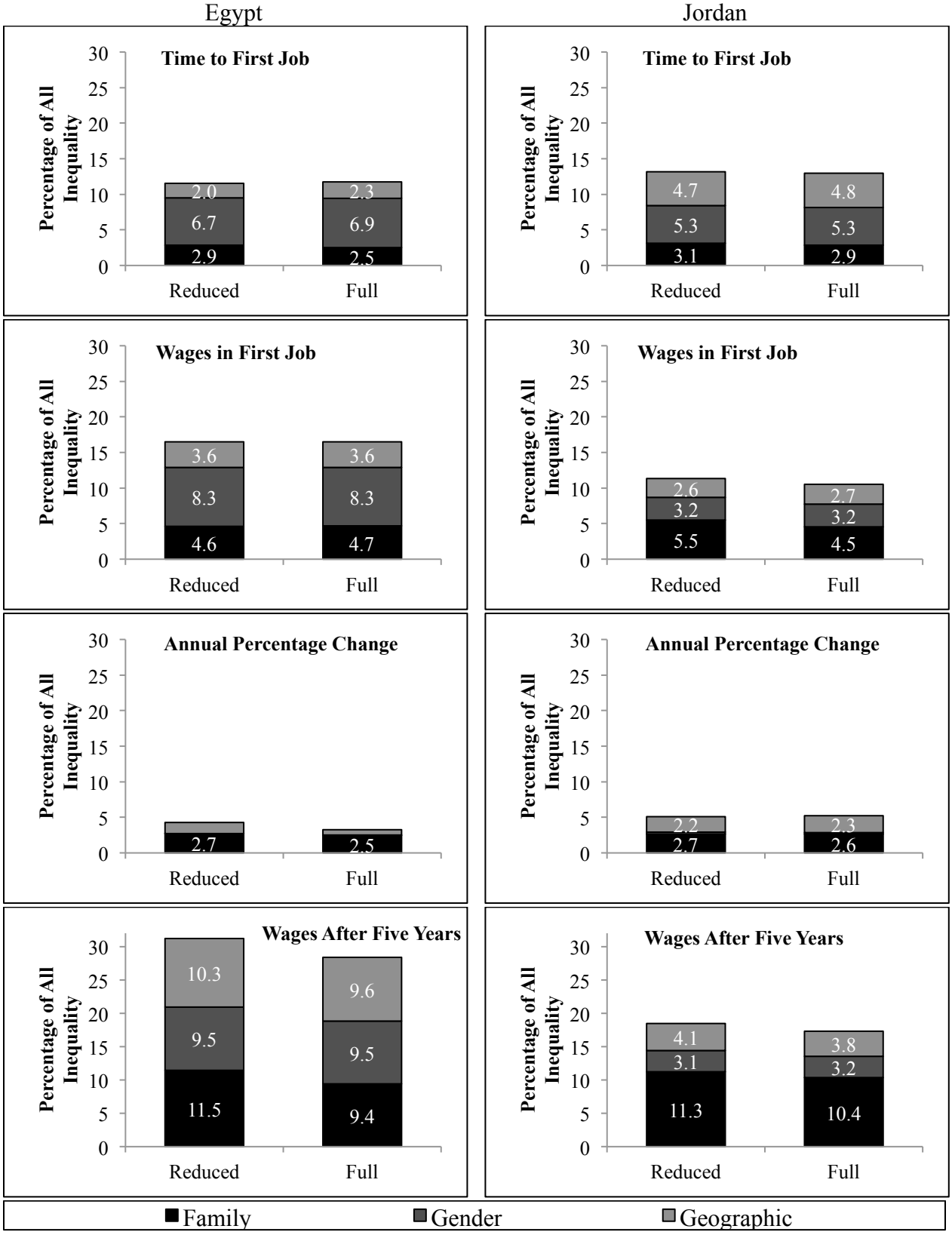
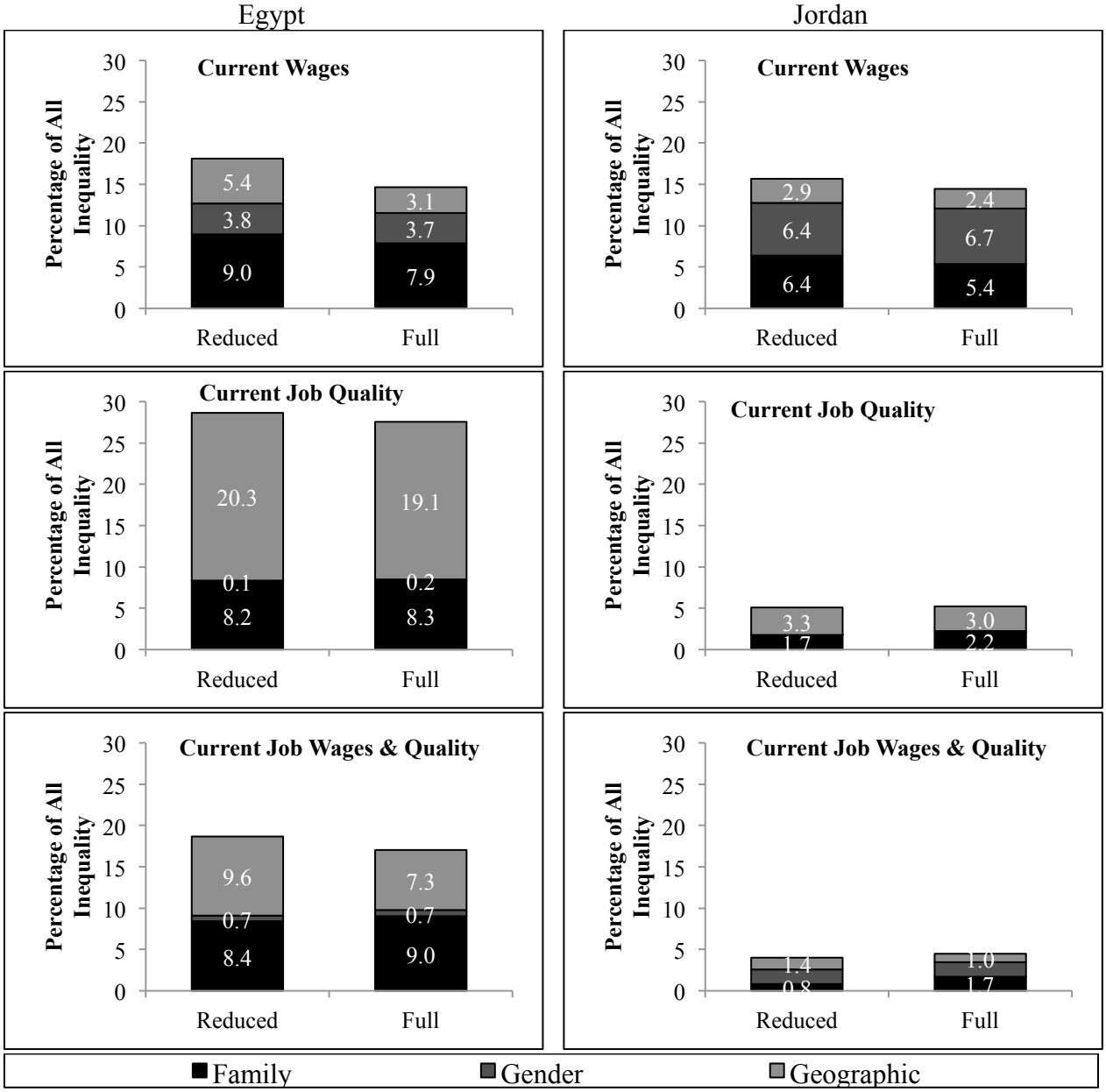


Figure 4. Shares of Inequality Attributable to Different Characteristics, by Current Labor Market Outcome and Characteristic, Egypt and Jordan



Source: Authors' calculations based on the surveys of higher education graduates

5 Discussion and Conclusions

There is substantial inequality of opportunity in the labor markets in Egypt and Jordan. This is the case even after accounting for pre-market inequality, by comparing individuals with the same level of education. The direct effects of circumstances are large, and the indirect effects of circumstances mediated through mixed circumstance/effort variables are small. The labor market itself is therefore a substantial source of inequality, not (just) the level of education, the field of study, or preparation. Family background, gender, and geographic differences all contributed significantly and substantially to labor market outcomes in both Egypt and Jordan.

Institutional features of the labor market, especially segmentation on socio-economic, kinship and gender lines (Assaad & Krafft, 2015b; Assaad, 1997, 2014a; Barsoum, 2004), are likely to be contributing to the substantial inequality of opportunity. A legacy of dualism in Arab labor markets (Assaad, 2014b), with a long history of a large, formal public sector offering substantially better overall benefits than the largely informal private sector may also play an important role in inequality of opportunity. Circumstances may have an important role in individuals' access to public sector jobs, as well as to good jobs within the private sector—a sector dominated by small firms, particularly in Egypt (Assaad & Krafft, 2015b; Assaad, 2014a). That Jordan has had greater success in generating formal private sector jobs than Egypt (Assaad & Krafft, 2015b; Assaad, 2014a) may have contributed to the lower degree of inequality of opportunity observed in Jordan, particularly for job quality.

Overall, Egypt is found to have more inequality of opportunity than Jordan. The stronger role of networks in graduates' job search processes in Egypt may contribute to this pattern (Assaad, Krafft, et al., 2014). Additionally, in Jordan, measured efforts contribute to a greater extent to inequality. The pattern of secondary and higher education characteristics and performance mattering more in Jordan than in Egypt could be due to one of two reasons. It could be the case that exams in Jordan better measure efforts, underlying ability or future productivity than exams in Egypt. If this is the case, both countries might be rewarding efforts equally, but we have a worse measure in Egypt than in Jordan. Alternatively, if the countries' exams are equivalent measures of effort, underlying ability and productivity, it may be the case that the Jordanian labor market rewards these efforts to a greater extent than the Egyptian labor market. However, we cannot distinguish which of these two potential reasons is driving our finding of greater inequality related to school characteristics and performance in Jordan. Other work suggests that the Jordanian labor market may directly reward school performance; in qualitative interviews with Jordanian youth, greater emphasis was placed on secondary exams than on connections, although social networks were still considered important (Brown et al., 2014).

It is also helpful to compare inequality of opportunity in wages within this relatively homogenous group to that of the population overall. Previous research in Egypt indicated that inequality of opportunity for all wage workers was around 15% in 2006 (Hassine, 2011), but that paper studied all wage workers—not taking into account individuals' own education and human capital. There are several differences that must be considered when comparing this finding to our findings. It would be unsurprising if, after equalizing the quantity of human capital by focusing on higher education graduates, we find a greater share of inequality is inequality of opportunity. It is also the case that, given inequality of opportunity in the education system (Assaad, 2013; Krafft et al., 2013), we would expect the circumstances of higher education graduates to be more alike than those of the general population. However, we use a richer set of circumstances than in previous work. Given our findings of around 30 percent inequality of opportunity in wages in Egypt after five years, which are our best approximation of long-run wages, it seems likely that either the equalization of human capital or the richer circumstances are contributing to the higher measured inequality of opportunity.

It is important to note that despite having a rich set of background characteristics, the inequality of opportunity that we measure is still likely to be a lower bound on true inequality of

opportunity, due to additional unobserved or unobservable circumstances, including social networks, parental values for work and education, or additional family circumstances such as income and wealth. In Egypt, we observe that almost a third of inequality in long-run wages can be explained by circumstances. If this is a lower bound on inequality of opportunity, perhaps half of inequality in wages is inequality of opportunity.

These high levels of inequality of opportunity are extremely concerning for a number of reasons. We have shown that there is inequality of opportunity not just pre-market, but in-market, which represents discrimination, segmentation, and unequal rewards to the same human capital. These problems represent an enormous deviation from social justice in the labor market. They also represent a substantial dysfunction in the key purpose of the labor market—allocating and rewarding individuals' human capital, efforts, and abilities. The incentives to accumulate skills and exert effort are substantially reduced in the face of such unequal rewards, creating economy-wide losses due to inequality of opportunity. Substantial reforms of the labor market will be required to reduce discrimination and segmentation, and promote rewards based on human capital and effort.

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Appendix 1: Additional Tables

Table 4. Sample Characteristics (Means)

	Egypt	Jordan
Female	0.249	0.340
Kindergarten Attendance	0.444	0.527
Private School		
Private Primary School	0.244	
Private Preparatory School	0.168	
Private Basic School		0.209
Private Secondary School	0.094	0.132
Secondary specialization		
Secondary specialization science	0.280	0.427
Secondary specialization arts	0.577	0.502
Secondary specialization tech.	0.143	0.071
Father's Education		
Father illiterate	0.209	0.104
Father basic	0.126	0.376
Father secondary or post-sec.	0.375	
Father secondary		0.189
Father post-secondary		0.108
Father university	0.276	0.181
Father above university	0.011	0.042
Unknown father's edu.	0.004	
Mother's Education		
Mother illiterate	0.364	0.219
Mother basic	0.136	0.414
Mother secondary or post-sec.	0.339	
Mother secondary		0.214
Mother post-secondary		0.093
Mother university	0.154	0.056
Mother above university	0.002	0.005
Unknown mother's edu.	0.005	
Age 15 Home Environment		
Access to computer at age 15	0.329	0.397
Access to internet at age 15	0.161	0.127
Access to magazines & books at age 15	0.758	0.763
Refugees in Jordan		0.050
Computer at Secondary School		
Never using Comp. at Sec School	0.522	0.179
Rarely using Comp. at Sec School	0.166	0.274
Sometimes using Comp. at Sec School	0.228	0.504
Daily using Comp at Sec School	0.084	0.043

	Egypt	Jordan
Age when graduated secondary	17.691	17.987
Secondary Grade		
Secondary Final Grade	73.181	74.587
Don't Know Sec Grade	0.032	0.001
Father's age at birth		
Father's age at birth	22.561	33.269
Don't know father's age at birth	0.311	0.027
Mother's age at birth		
Mother's age at birth	18.130	27.471
Don't know mother's age at birth	0.322	0.016
Egypt Governorates		
Cairo	0.354	
Alexandria	0.104	
Port-said	0.008	
Suez	0.020	
Damietta	0.008	
Dakhalia	0.043	
Sharkia	0.045	
Kalyoubia	0.070	
Kafr El Sheikh	0.009	
Gharbia	0.037	
Menoufia	0.008	
Behera	0.027	
Ismailia	0.009	
Giza	0.151	
Menia	0.009	
Asyout	0.027	
Suhag	0.019	
Aswan	0.010	
Beni-Suef & Fayoum	0.027	
Luxor & Qena	0.016	
Jordan Governorates		
Amman		0.562
Balqa		0.055
Zarqa		0.094
Madaba		0.016
Irbid		0.098
Mafraq		0.032
Jarash		0.030
Ajlun		0.020
Karak		0.055
Tafiela		0.023

	Egypt	Jordan
Aqaba		0.015
Father's Employment		
Formal Professional Father	0.298	0.238
Employer Professional Father	0.103	0.015
Informal Professional Father	0.061	0.008
Formal Technician Father	0.181	0.279
Employer Technician Father	0.015	0.030
Informal Technician Father	0.030	0.041
Formal Craft Father	0.139	0.101
Employer Craft Father	0.032	0.044
Informal Craft Father	0.091	0.090
Unknown Father's Employment	0.051	0.154
Years of Work Experience	5.322	6.441
University Private	0.340	0.438
University IT	0.213	0.315
Selective University	0.452	0.242
Teaching Language		
Arabic Language	0.844	0.176
English Language	0.025	0.081
Arabic and English Language	0.131	0.743
Univ. Grade (Percentage)	66.374	72.112
N(Observations)	1,616	1,418

Source: Authors' calculations based on the surveys of higher education graduates

Table 5. Egypt Inequality

Outcome	Time to first Job	Wages in First job	Annual Percentage Change	Wage Five Years In	Current Wages	Job Quality	Current Job Wages & Quality
Inequality							
Total	1.147***	0.246***	3.815***	0.346***	0.230***	0.0182***	0.0239***
	(0.0279)	(0.0135)	(0.876)	(0.0187)	(0.0118)	(0.000903)	(0.00126)
Specification 1							
Between	0.131***	0.0395***	0.163	0.101***	0.0399***	0.00537***	0.00471***
	(0.0256)	(0.00705)	(0.124)	(0.0141)	(0.00678)	(0.000730)	(0.000694)
Family	0.0328*	0.0114**	0.104	0.0397***	0.0206***	0.00150***	0.00201***
	(0.0164)	(0.00408)	(0.0850)	(0.0109)	(0.00501)	(0.000382)	(0.000485)
Gender	0.0764***	0.0203***	0.00110	0.0327***	0.00866*	0.0000260	0.000171
	(0.0188)	(0.00357)	(0.00807)	(0.00883)	(0.00408)	(0.0000580)	(0.000112)
Geographic	0.0229	0.00885*	0.0572	0.0355***	0.0124**	0.00369***	0.00229***
	(0.0149)	(0.00413)	(0.0533)	(0.00904)	(0.00410)	(0.000649)	(0.000508)
Specification 2							
Between	0.163***	0.0534***	0.305*	0.123***	0.0533***	0.00655***	0.00632***
	(0.0263)	(0.00766)	(0.149)	(0.0149)	(0.00775)	(0.000731)	(0.000800)
Family	0.0286	0.0115**	0.0945	0.0325**	0.0182***	0.00151***	0.00216***
	(0.0163)	(0.00425)	(0.0743)	(0.0108)	(0.00497)	(0.000357)	(0.000484)
Gender	0.0794***	0.0203***	0.00121	0.0327***	0.00840*	0.0000314	0.000171
	(0.0177)	(0.00354)	(0.00792)	(0.00899)	(0.00413)	(0.0000512)	(0.000122)
Geographic	0.0269	0.00874*	0.0280	0.0331**	0.00709	0.00347***	0.00174*
	(0.0140)	(0.00398)	(0.0618)	(0.0101)	(0.00566)	(0.000622)	(0.000707)
Basic Ed.	0.00427	0.00341	0.0145	0.00922	0.00735*	0.000457*	0.000776*
	(0.00586)	(0.00269)	(0.0148)	(0.00651)	(0.00323)	(0.000198)	(0.000325)
Sec Ed. & Perform	0.0216*	0.00914**	0.0673	-0.000243	0.00725	0.000306	0.000836*
	(0.0106)	(0.00310)	(0.0453)	(0.0109)	(0.00488)	(0.000286)	(0.000426)
Higher Ed. & Perform	0.00502	0.00404	0.0264	0.0178*	0.00558	0.00112***	0.00124**
	(0.0126)	(0.00326)	(0.0294)	(0.00809)	(0.00448)	(0.000306)	(0.000459)
Higher Ed. Factors	-0.00670	-0.000971	0.0132	0.000543	0.00334	0.00108***	0.00108**
	(0.00813)	(0.00206)	(0.0250)	(0.00853)	(0.00204)	(0.000324)	(0.000332)
Share of All Inequality							
Share Reduced (Inequality of Opportunity)	11.4	16.1	4.3	29.2	17.3	29.5	19.7
Family	2.9	4.6	2.7	11.5	9.0	8.2	8.4
Gender	6.7	8.3	0.0	9.5	3.8	0.1	0.7
Geographic	2.0	3.6	1.5	10.3	5.4	20.3	9.6
Share Full	14.2	21.7	8.0	35.5	23.2	36.0	26.4
Family	2.5	4.7	2.5	9.4	7.9	8.3	9.0
Gender	6.9	8.3	0.0	9.5	3.7	0.2	0.7
Geographic	2.3	3.6	0.7	9.6	3.1	19.1	7.3
Basic Ed.	0.4	1.4	0.4	2.7	3.2	2.5	3.2
Sec Ed. & Perform	1.9	3.7	1.8	-0.1	3.2	1.7	3.5
Higher Ed. & Perform	0.4	1.6	0.7	5.1	2.4	6.2	5.2
Higher Ed. Factors	-0.6	-0.4	0.3	0.2	1.5	5.9	4.5
Reduced/Full	80.4	74.0	53.4	82.1	74.9	82.0	74.5
N	1604	1439	1174	751	1068	1116	1068

Source: Authors' calculations based on the surveys of higher education graduates

Table 6. Jordan Inequality

Outcome	Time to first Job	Wages in First job	Annual Percentage Change	Wage Five Years In	Current Wages	Job Quality	Current Job Wages & Quality
Inequality							
Total	1.158***	0.0974***	1.251***	0.255***	0.0987***	0.0138***	0.0150***
	(0.0247)	(0.00952)	(0.0908)	(0.0404)	(0.00857)	(0.000619)	(0.00101)
Specification 1							
Between	0.150***	0.0118**	0.0775***	0.0456*	0.0153***	0.000627**	0.000576*
	(0.0237)	(0.00401)	(0.0204)	(0.0182)	(0.00370)	(0.000230)	(0.000243)
Family	0.0361*	0.00535	0.0332*	0.0287	0.00628*	0.000241	0.000125
	(0.0174)	(0.00351)	(0.0162)	(0.0155)	(0.00289)	(0.000177)	(0.000198)
Gender	0.0615***	0.00310**	0.00344	0.00799*	0.00634***	0.00000227	0.000264*
	(0.0148)	(0.00100)	(0.00359)	(0.00395)	(0.00145)	(0.0000215)	(0.000104)
Geographic	0.0549***	0.00257	0.0272*	0.0105**	0.00287**	0.000458**	0.000209
	(0.0152)	(0.00148)	(0.0120)	(0.00406)	(0.000976)	(0.000169)	(0.000117)
Specification 2							
Between	0.178***	0.0187***	0.122***	0.0594**	0.0259***	0.00173***	0.00215***
	(0.0255)	(0.00470)	(0.0291)	(0.0218)	(0.00511)	(0.000318)	(0.000377)
Family	0.0333*	0.00442	0.0328*	0.0264*	0.00529*	0.000303	0.000257
	(0.0165)	(0.00342)	(0.0159)	(0.0133)	(0.00224)	(0.000178)	(0.000183)
Gender	0.0608***	0.00315**	0.00326	0.00819*	0.00666***	0.00000748	0.000261*
	(0.0153)	(0.00104)	(0.00404)	(0.00395)	(0.00148)	(0.0000271)	(0.000110)
Geographic	0.0559***	0.00266	0.0291*	0.00961*	0.00235*	0.000410*	0.000151
	(0.0148)	(0.00166)	(0.0125)	(0.00380)	(0.00102)	(0.000166)	(0.000116)
Basic Ed.	0.00498	0.000436	-0.000673	0.00603	0.00142	-0.00000323	0.0000371
	(0.00579)	(0.00106)	(0.00412)	(0.00541)	(0.00122)	(0.0000622)	(0.000139)
Sec Ed. & Perform	-0.000427	0.00639**	0.0375*	0.0128	0.00837*	0.000417*	0.000959***
	(0.0105)	(0.00205)	(0.0179)	(0.0146)	(0.00325)	(0.000182)	(0.000256)
Higher Ed. & Perform	0.0150	0.00256*	0.00966	0.00124	0.00450*	0.000591**	0.000675**
	(0.0142)	(0.00115)	(0.0104)	(0.00706)	(0.00189)	(0.000184)	(0.000227)
Higher Ed. Factors	0.0125	-0.000264	0.00106	0.000378	-0.000528	0.0000361	0.0000489
	(0.00863)	(0.000804)	(0.00645)	(0.00304)	(0.000659)	(0.000103)	(0.0000870)
Share of All Inequality							
Share Reduced (Inequality of Opportunity)	13.0	12.1	6.2	17.9	15.5	4.5	3.8
Family	3.1	5.5	2.7	11.3	6.4	1.7	0.8
Gender	5.3	3.2	0.3	3.1	6.4	0.0	1.8
Geographic	4.7	2.6	2.2	4.1	2.9	3.3	1.4
Share Full	15.4	19.2	9.8	23.3	26.2	12.5	14.3
Family	2.9	4.5	2.6	10.4	5.4	2.2	1.7
Gender	5.3	3.2	0.3	3.2	6.7	0.1	1.7
Geographic	4.8	2.7	2.3	3.8	2.4	3.0	1.0
Basic Ed.	0.4	0.4	-0.1	2.4	1.4	0.0	0.2
Sec Ed. & Perform	0.0	6.6	3.0	5.0	8.5	3.0	6.4
Higher Ed. & Perform	1.3	2.6	0.8	0.5	4.6	4.3	4.5
Higher Ed. Factors	1.1	-0.3	0.1	0.1	-0.5	0.3	0.3
Reduced/Full	84.3	63.1	63.5	76.8	59.1	36.2	26.8
N	1408	1387	1303	912	1261	1267	1261

Source: Authors' calculations based on the surveys of higher education graduates

Table 7. Egypt Regressions

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Father's Education (Illit. Omit.)														
Father basic	0.350**	0.339**	-0.058	-0.077	4.370	4.598	-0.047	-0.089	0.105	0.094	-0.026	-0.060	0.097	0.047
	(0.122)	(0.124)	(0.063)	(0.063)	(2.299)	(2.347)	(0.099)	(0.100)	(0.072)	(0.072)	(0.093)	(0.093)	(0.152)	(0.151)
Father secondary or post-sec.	0.144	0.140	0.133*	0.121*	3.359	3.581	0.276**	0.226*	0.261***	0.234***	0.258**	0.208*	0.609***	0.522***
	(0.111)	(0.112)	(0.057)	(0.058)	(2.060)	(2.102)	(0.092)	(0.093)	(0.065)	(0.066)	(0.085)	(0.086)	(0.138)	(0.138)
Father university	0.174	0.178	0.228**	0.222**	2.651	2.488	0.346**	0.286*	0.388***	0.332***	0.327**	0.266*	0.941***	0.781***
	(0.142)	(0.144)	(0.075)	(0.075)	(2.678)	(2.745)	(0.120)	(0.124)	(0.085)	(0.085)	(0.111)	(0.111)	(0.180)	(0.179)
Father above university	0.139	0.164	0.282	0.259	-7.121	-6.930	-0.050	-0.166	-0.015	-0.087	0.496	0.480	0.698	0.519
	(0.355)	(0.363)	(0.181)	(0.183)	(6.982)	(7.137)	(0.354)	(0.365)	(0.211)	(0.212)	(0.279)	(0.280)	(0.447)	(0.445)
Unknown Father's Edu.	-0.664	-0.633	0.165	0.251	1.957	3.057	0.149	0.331	0.265	0.296	1.023*	0.926*	1.109	1.092
	(0.577)	(0.580)	(0.286)	(0.284)	(12.899)	(13.030)	(0.410)	(0.415)	(0.330)	(0.327)	(0.441)	(0.433)	(0.699)	(0.684)
Mother's Education (Illit. Omit.)														
Mother basic	0.072	0.061	-0.030	-0.043	0.868	0.850	0.102	0.127	0.027	0.005	0.081	0.065	0.104	0.051
	(0.111)	(0.112)	(0.057)	(0.057)	(2.043)	(2.077)	(0.091)	(0.093)	(0.063)	(0.063)	(0.083)	(0.082)	(0.134)	(0.132)
Mother secondary or post-sec.	0.075	0.073	-0.082	-0.082	-1.019	-1.876	-0.045	-0.068	-0.029	-0.064	0.081	0.051	0.096	0.016
	(0.101)	(0.103)	(0.052)	(0.053)	(1.878)	(1.942)	(0.084)	(0.087)	(0.059)	(0.060)	(0.078)	(0.078)	(0.126)	(0.125)
Mother university	0.077	0.073	-0.081	-0.123	1.120	0.167	0.052	-0.007	-0.004	-0.075	0.160	0.050	0.122	-0.086
	(0.137)	(0.142)	(0.071)	(0.073)	(2.569)	(2.666)	(0.119)	(0.123)	(0.082)	(0.083)	(0.108)	(0.108)	(0.174)	(0.174)
Mother above university	0.238	0.347	-0.197	-0.381	-11.724	-13.933	1.049	0.825	0.189	0.085	0.565	0.128	0.256	-0.196
	(0.685)	(0.698)	(0.338)	(0.341)	(15.368)	(15.558)	(0.635)	(0.653)	(0.459)	(0.456)	(0.519)	(0.518)	(0.972)	(0.955)
Unknown Mother's Edu.	0.281	0.263	0.059	0.089	-8.507	-9.796	-0.979*	-0.657	0.142	0.245	-0.084	-0.012	0.451	0.643
	(0.495)	(0.501)	(0.262)	(0.262)	(9.957)	(10.228)	(0.397)	(0.402)	(0.296)	(0.296)	(0.395)	(0.393)	(0.626)	(0.620)
Age 15 Home Env.														
Access to computer at age 15	-0.011	0.028	0.066	0.062	0.559	0.298	0.231**	0.152	0.073	0.057	0.046	0.042	0.241*	0.206
	(0.095)	(0.098)	(0.049)	(0.050)	(1.753)	(1.814)	(0.080)	(0.084)	(0.055)	(0.056)	(0.072)	(0.072)	(0.116)	(0.117)
Access to internet at age 15	-0.069	-0.018	-0.094	-0.080	1.488	1.719	0.069	0.134	0.004	0.025	-0.050	-0.057	-0.134	-0.133
	(0.117)	(0.119)	(0.061)	(0.061)	(2.202)	(2.260)	(0.112)	(0.115)	(0.070)	(0.070)	(0.091)	(0.092)	(0.147)	(0.147)
Access to magazines & books at age 15	0.044	0.054	0.098*	0.101*	-3.911**	-4.139**	0.101	0.059	0.093	0.086	0.238***	0.213***	0.380***	0.360***
	(0.080)	(0.083)	(0.042)	(0.042)	(1.514)	(1.562)	(0.069)	(0.071)	(0.047)	(0.048)	(0.062)	(0.063)	(0.100)	(0.101)
Parents' Age at birth														
Father's age at birth	0.006	0.008	-0.023	-0.025	-0.005	0.473	-0.012	0.001	-0.012	-0.011	-0.017	-0.011	-0.016	-0.009
	(0.050)	(0.050)	(0.026)	(0.026)	(1.009)	(1.029)	(0.043)	(0.044)	(0.031)	(0.031)	(0.041)	(0.040)	(0.066)	(0.065)
Father's age at birth squared/100	-0.009	-0.011	0.029	0.031	0.070	-0.621	0.001	-0.016	0.008	0.006	0.047	0.039	0.042	0.030
	(0.070)	(0.070)	(0.037)	(0.037)	(1.441)	(1.469)	(0.062)	(0.063)	(0.044)	(0.044)	(0.058)	(0.058)	(0.094)	(0.093)

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Don't Know Father's age at birth	0.170	0.252	-0.495	-0.525	0.825	7.983	-0.412	-0.198	-0.255	-0.282	0.058	0.122	0.109	0.181
	(0.882)	(0.890)	(0.465)	(0.464)	(17.569)	(17.930)	(0.757)	(0.764)	(0.542)	(0.544)	(0.707)	(0.704)	(1.147)	(1.139)
Mother's age at birth	-0.120*	-0.120*	0.017	0.012	-0.809	-0.853	0.013	0.015	0.017	0.013	0.095*	0.091*	0.101	0.091
	(0.053)	(0.053)	(0.027)	(0.027)	(0.980)	(0.987)	(0.041)	(0.042)	(0.030)	(0.030)	(0.039)	(0.038)	(0.063)	(0.062)
Mother's age at birth squared/100	0.183*	0.183*	-0.027	-0.023	1.456	1.669	0.004	-0.008	-0.021	-0.014	-0.168*	-0.164*	-0.165	-0.153
	(0.093)	(0.093)	(0.048)	(0.047)	(1.721)	(1.733)	(0.072)	(0.074)	(0.052)	(0.052)	(0.068)	(0.067)	(0.111)	(0.108)
Don't know mother's age at birth	-1.909**	-1.918*	0.330	0.201	-12.058	-9.986	0.355	0.357	0.348	0.286	1.282*	1.209*	1.473	1.245
	(0.739)	(0.745)	(0.381)	(0.380)	(13.843)	(13.957)	(0.576)	(0.585)	(0.425)	(0.421)	(0.550)	(0.542)	(0.900)	(0.882)
Father's Emp. Stat. (Blue Coll. Informal Omit.)														
Formal Professional Father	-0.123	-0.128	-0.029	-0.037	2.564	2.230	-0.172	-0.140	-0.074	-0.082	0.254*	0.209	0.018	-0.041
	(0.144)	(0.145)	(0.074)	(0.074)	(2.691)	(2.726)	(0.117)	(0.119)	(0.084)	(0.083)	(0.110)	(0.108)	(0.178)	(0.175)
Employer Professional Father	-0.261	-0.252	0.059	0.055	5.531	4.446	-0.011	0.053	0.224*	0.181*	0.513***	0.420***	0.797***	0.646***
	(0.157)	(0.159)	(0.083)	(0.083)	(3.006)	(3.065)	(0.130)	(0.132)	(0.091)	(0.091)	(0.119)	(0.119)	(0.193)	(0.191)
Informal Professional Father	0.194	0.184	0.068	0.067	4.278	4.171	0.099	0.102	0.049	0.047	0.256	0.231	0.333	0.331
	(0.176)	(0.178)	(0.094)	(0.094)	(3.421)	(3.461)	(0.160)	(0.161)	(0.108)	(0.107)	(0.142)	(0.140)	(0.229)	(0.225)
Formal Service Father	-0.104	-0.113	-0.065	-0.069	2.834	2.443	-0.129	-0.131	-0.003	-0.017	0.352***	0.324**	0.294	0.243
	(0.139)	(0.141)	(0.071)	(0.071)	(2.619)	(2.652)	(0.112)	(0.113)	(0.082)	(0.081)	(0.107)	(0.105)	(0.173)	(0.170)
Employer Service Father	-0.114	-0.115	0.448**	0.482**	2.506	0.656	0.579*	0.628*	0.535**	0.464**	0.423	0.348	1.035**	0.821*
	(0.292)	(0.301)	(0.163)	(0.165)	(5.682)	(5.862)	(0.254)	(0.266)	(0.175)	(0.177)	(0.233)	(0.235)	(0.370)	(0.371)
Informal Service Father	0.180	0.153	-0.266*	-0.257*	8.574*	7.746	-0.200	-0.135	-0.141	-0.136	0.032	0.051	-0.190	-0.149
	(0.225)	(0.227)	(0.117)	(0.117)	(4.201)	(4.282)	(0.209)	(0.212)	(0.138)	(0.138)	(0.183)	(0.182)	(0.291)	(0.289)
Formal Craft Father	-0.053	-0.015	-0.048	-0.045	-0.358	-0.121	-0.151	-0.109	-0.009	0.007	0.296**	0.268*	0.222	0.194
	(0.143)	(0.144)	(0.074)	(0.073)	(2.715)	(2.750)	(0.119)	(0.120)	(0.083)	(0.083)	(0.108)	(0.107)	(0.176)	(0.174)
Employer Craft Father	-0.389	-0.413	0.204	0.222	0.853	0.501	0.374*	0.378*	0.083	0.097	0.443**	0.469**	0.457	0.528
	(0.216)	(0.219)	(0.114)	(0.115)	(3.992)	(4.070)	(0.175)	(0.179)	(0.131)	(0.131)	(0.168)	(0.167)	(0.277)	(0.274)
Unknown father's Employment	-0.241	-0.264	-0.096	-0.071	2.467	2.476	0.052	0.129	0.113	0.135	0.455**	0.518***	0.378	0.488*
	(0.188)	(0.190)	(0.098)	(0.098)	(3.595)	(3.673)	(0.162)	(0.164)	(0.107)	(0.107)	(0.141)	(0.140)	(0.226)	(0.224)
Sex (Male Omit.)														
Female	0.574***	0.624***	-0.484***	-0.491***	-1.153	-0.985	-0.687***	-0.693***	-0.440***	-0.453***	0.140*	0.094	-0.250*	-0.320**
	(0.078)	(0.080)	(0.040)	(0.040)	(1.483)	(1.522)	(0.067)	(0.069)	(0.047)	(0.048)	(0.062)	(0.062)	(0.100)	(0.100)
Basic Education														
Kindergarten Attendance		-0.029		-0.078*		2.226		0.046		0.016		0.011		-0.013
		(0.078)		(0.040)		(1.456)		(0.066)		(0.045)		(0.059)		(0.095)
Private Primary School		0.200		-0.052		-0.097		-0.134		0.025		0.042		0.124
		(0.121)		(0.062)		(2.291)		(0.100)		(0.071)		(0.092)		(0.148)

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Private Preparatory School		-0.189		0.191**		2.094		0.288*		0.144		0.195		0.325
		(0.145)		(0.073)		(2.753)		(0.128)		(0.085)		(0.110)		(0.177)
Secondary Education														
Private Secondary School		-0.084		0.087		-0.328		-0.194		0.159		0.046		0.309
		(0.140)		(0.071)		(2.647)		(0.129)		(0.085)		(0.111)		(0.179)
Secondary specialization science		5.712		-2.336		54.188		-5.177		0.685		-2.690		-3.482
		(4.034)		(2.007)		(74.976)		(3.163)		(2.254)		(2.963)		(4.722)
Secondary specialization tech		-1.467		3.118		-98.327		4.195		5.730		-1.237		1.128
		(6.321)		(3.196)		(130.721)		(5.985)		(3.999)		(5.204)		(8.377)
Rarely using Comp at Sec School		-0.073		-0.038		1.013		0.027		0.027		0.046		0.094
		(0.101)		(0.052)		(1.909)		(0.088)		(0.059)		(0.077)		(0.124)
Sometimes using Comp at Sec School		-0.149		-0.090		1.508		0.065		-0.026		-0.047		-0.017
		(0.093)		(0.047)		(1.766)		(0.083)		(0.055)		(0.072)		(0.116)
Daily using Comp at Sec School		-0.320*		-0.074		-2.959		-0.187		-0.191*		0.092		-0.072
		(0.138)		(0.069)		(2.562)		(0.127)		(0.081)		(0.106)		(0.170)
Secondary Performance														
Age when graduated secondary		-0.038		-0.029		0.823		0.006		-0.019		-0.018		-0.027
		(0.031)		(0.016)		(0.613)		(0.026)		(0.018)		(0.024)		(0.039)
Secondary Final Grade		0.087		-0.018		0.351		-0.031		0.059		-0.014		0.062
		(0.061)		(0.031)		(1.198)		(0.057)		(0.036)		(0.047)		(0.076)
Sec Grade SQ/100		-0.061		0.011		-0.184		0.030		-0.041		0.010		-0.042
		(0.042)		(0.021)		(0.822)		(0.040)		(0.025)		(0.032)		(0.052)
Don't Know Sec Grade		2.864		-0.721		13.214		-0.663		2.002		-0.413		2.262
		(2.200)		(1.115)		(43.627)		(2.084)		(1.316)		(1.707)		(2.757)
Interaction: Sec Grade & Sci Spec		-0.160		0.066		-1.668		0.141		-0.032		0.063		0.074
		(0.109)		(0.054)		(2.032)		(0.087)		(0.061)		(0.080)		(0.128)
Interaction: Sec Grade & Tech Spec		0.032		-0.083		2.469		-0.099		-0.161		0.024		-0.046
		(0.168)		(0.085)		(3.450)		(0.157)		(0.106)		(0.138)		(0.223)
Interaction: Sq-Sec Grade & Sci Spec		0.108		-0.045		1.193		-0.095		0.030		-0.035		-0.036
		(0.073)		(0.037)		(1.363)		(0.059)		(0.041)		(0.054)		(0.086)
Interaction: Sq-Sec Grade & Tech Spec		-0.020		0.053		-1.529		0.052		0.109		-0.011		0.036
		(0.111)		(0.056)		(2.260)		(0.103)		(0.070)		(0.091)		(0.147)
Interaction: Sci Sec Grade & DK Sec Grade		-5.576		2.785		-67.252		5.335		-0.964		2.749		3.565
		(4.055)		(2.021)		(75.383)		(3.192)		(2.269)		(2.980)		(4.753)

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Interaction: Tech Sec Grade & DK Sec Grade		1.672		-3.096		92.400		-4.258		-5.633		1.279		-1.099
		(6.342)		(3.207)		(131.066)		(6.000)		(4.011)		(5.221)		(8.402)
University Char. (Public Not Sel. Comm. Omit.)														
Private		2.397		-2.724		191.720		-6.727		0.571		11.444*		2.239
		(6.151)		(3.493)		(123.312)		(5.867)		(3.842)		(5.034)		(8.048)
Selective		-0.187		-0.000		-0.775		-0.109		-0.063		0.093		0.067
		(0.098)		(0.049)		(1.805)		(0.077)		(0.056)		(0.073)		(0.118)
Selective and Private		0.332		0.029		4.521		0.102		0.213		-0.076		0.072
		(0.247)		(0.130)		(4.814)		(0.231)		(0.150)		(0.195)		(0.314)
IT		8.546		6.811		252.546		3.684		6.883		9.204		12.845
		(9.325)		(5.179)		(183.734)		(11.668)		(5.556)		(7.303)		(11.638)
Private and IT		-4.334		-1.155		-424.120		-0.330		-9.329		-14.450		-16.937
		(11.885)		(6.568)		(239.589)		(13.532)		(7.325)		(9.619)		(15.343)
Selective and IT		0.531		0.126		-4.444		-0.221		0.312		-0.385		-0.180
		(0.416)		(0.213)		(7.841)		(0.368)		(0.238)		(0.312)		(0.498)
Selective Private and IT		-0.499		-0.377		3.941		0.192		-0.683*		0.208		-0.437
		(0.524)		(0.270)		(10.062)		(0.473)		(0.303)		(0.397)		(0.635)
English Language		0.250		0.250*		-1.465		0.409*		0.363**		0.159		0.806**
		(0.228)		(0.116)		(4.261)		(0.178)		(0.123)		(0.161)		(0.257)
Arabic and English Language		-0.047		0.006		0.728		0.092		-0.025		-0.154		-0.097
		(0.107)		(0.055)		(2.047)		(0.096)		(0.063)		(0.081)		(0.131)
Univ. Grade		0.099		0.061		1.477		0.045		0.044		0.103		0.058
		(0.073)		(0.038)		(1.411)		(0.060)		(0.043)		(0.056)		(0.090)
Univ. Grade Sq/100		-0.077		-0.039		-1.159		-0.027		-0.028		-0.064		-0.023
		(0.053)		(0.028)		(1.031)		(0.044)		(0.031)		(0.041)		(0.066)
Interaction: Univ. Grade & Priv. Comm.		-0.074		0.076		-5.420		0.204		-0.014		-0.329*		-0.069
		(0.176)		(0.099)		(3.503)		(0.166)		(0.109)		(0.143)		(0.228)
Interaction: Univ. Grade & Priv. Comm. Sq/100		0.051		-0.055		3.761		-0.152		0.004		0.230*		0.049
		(0.124)		(0.070)		(2.459)		(0.116)		(0.076)		(0.100)		(0.159)
Interaction: Univ. Grade & Priv. IT.		-0.169		-0.087		-0.407		0.099		0.058		-0.193		0.050
		(0.159)		(0.081)		(3.339)		(0.138)		(0.103)		(0.135)		(0.216)
Interaction: Univ. Grade & Priv. IT.		0.104		0.064		0.102		-0.069		-0.046		0.144		-0.038

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Sq/100														
		(0.115)		(0.058)		(2.413)		(0.100)		(0.075)		(0.097)		(0.157)
Interaction: Univ. Grade & Pub. IT.		-0.237		-0.203		-7.422		-0.118		-0.207		-0.261		-0.367
		(0.266)		(0.147)		(5.196)		(0.328)		(0.157)		(0.206)		(0.328)
Interaction: Univ. Grade & Pub. IT. Sq/100		0.153		0.144		5.376		0.087		0.144		0.184		0.252
		(0.188)		(0.103)		(3.645)		(0.229)		(0.109)		(0.144)		(0.229)
Process Factors														
Pedagogy Factor		0.120		-0.038		3.901		-0.007		0.103		0.051		0.077
		(0.112)		(0.058)		(2.251)		(0.102)		(0.068)		(0.087)		(0.142)
Accountability Factor		-0.096		0.018		-4.463*		0.053		-0.114		-0.062		-0.133
		(0.105)		(0.054)		(2.182)		(0.108)		(0.066)		(0.082)		(0.137)
Perception Factor		-0.028		0.016		0.806		-0.006		0.071		0.238**		0.331*
		(0.105)		(0.054)		(2.087)		(0.094)		(0.063)		(0.081)		(0.132)
Work Exp.									0.072***	0.068***	0.098***	0.083***	0.171***	0.155***
									(0.016)	(0.016)	(0.021)	(0.021)	(0.034)	(0.034)
Work Exp. Sq.									-0.002*	-0.002	-0.003*	-0.002	-0.003	-0.003
									(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Constant	2.365*	-3.011	6.964***	6.045***	16.284	-68.595	7.177***	5.761*	6.450***	3.221	3.135***	-0.038	3.782***	-0.597
	(0.919)	(3.469)	(0.482)	(1.778)	(17.490)	(66.693)	(0.740)	(2.933)	(0.539)	(2.016)	(0.702)	(2.637)	(1.141)	(4.224)
Governorates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
P-Model	0.000	0.000	0.000	0.000	0.392	0.288	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	1605	1604	1440	1439	1175	1174	751	751	1069	1068	1117	1116	1069	1068
R-squared	0.082	0.110	0.194	0.239	0.043	0.080	0.328	0.385	0.258	0.318	0.318	0.378	0.302	0.372
Adj. R-Sq.	0.054	0.059	0.166	0.190	0.002	0.006	0.282	0.305	0.221	0.256	0.286	0.324	0.268	0.315

Source: Authors' calculations based on the surveys of higher education graduates

Table 8. Jordan Regressions

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Father's Education (Illit. Omit.)														
Father basic	0.050	0.042	0.027	0.031	1.821	2.036	0.235**	0.214**	0.040	0.027	-0.061	-0.119	0.085	0.002
	(0.146)	(0.148)	(0.043)	(0.042)	(1.062)	(1.074)	(0.075)	(0.076)	(0.041)	(0.040)	(0.104)	(0.103)	(0.156)	(0.153)
Father secondary or post-sec.	0.301	0.294	-0.033	-0.029	1.116	1.581	0.258**	0.241**	0.013	0.003	-0.119	-0.207	-0.011	-0.125
	(0.170)	(0.172)	(0.050)	(0.050)	(1.246)	(1.266)	(0.090)	(0.091)	(0.047)	(0.047)	(0.121)	(0.121)	(0.183)	(0.180)
Father university	-0.119	-0.067	-0.034	-0.032	1.082	1.372	0.350***	0.275**	-0.005	-0.029	-0.161	-0.257	-0.090	-0.253
	(0.196)	(0.199)	(0.058)	(0.057)	(1.439)	(1.459)	(0.105)	(0.106)	(0.055)	(0.054)	(0.140)	(0.139)	(0.210)	(0.207)
Father above university	-0.025	0.056	-0.038	-0.076	1.763	2.131	0.260*	0.168	0.036	-0.020	-0.141	-0.273	0.025	-0.253
	(0.211)	(0.215)	(0.062)	(0.062)	(1.531)	(1.564)	(0.113)	(0.115)	(0.058)	(0.058)	(0.148)	(0.149)	(0.223)	(0.222)
Unknown Father's Edu.	-0.044	-0.020	-0.032	-0.029	1.342	1.656	0.244	0.253	0.018	-0.002	-0.215	-0.232	-0.147	-0.231
	(0.277)	(0.280)	(0.081)	(0.080)	(2.028)	(2.046)	(0.150)	(0.150)	(0.075)	(0.074)	(0.192)	(0.191)	(0.290)	(0.284)
Mother's Education (Illit. Omit.)														
Mother basic	-0.129	-0.137	0.005	0.014	1.158	0.847	0.041	0.014	0.053	0.045	-0.001	-0.051	0.070	0.002
	(0.113)	(0.115)	(0.033)	(0.033)	(0.826)	(0.843)	(0.058)	(0.060)	(0.032)	(0.031)	(0.080)	(0.080)	(0.121)	(0.120)
Mother secondary or post-sec.	-0.142	-0.159	0.035	0.032	2.472*	2.221*	0.130	0.090	0.124**	0.099*	0.133	0.072	0.339*	0.215
	(0.141)	(0.146)	(0.042)	(0.042)	(1.039)	(1.073)	(0.075)	(0.078)	(0.040)	(0.040)	(0.101)	(0.102)	(0.152)	(0.152)
Mother university	-0.034	-0.038	0.057	0.051	1.912	1.599	0.254**	0.191	0.123**	0.093	0.163	0.103	0.338	0.209
	(0.170)	(0.176)	(0.050)	(0.050)	(1.257)	(1.306)	(0.094)	(0.097)	(0.047)	(0.048)	(0.120)	(0.122)	(0.182)	(0.183)
Mother above university	-0.222	-0.230	0.071	0.035	2.925	2.386	0.299*	0.169	0.187**	0.114*	0.135	0.005	0.586**	0.268
	(0.207)	(0.214)	(0.061)	(0.062)	(1.515)	(1.576)	(0.117)	(0.119)	(0.057)	(0.057)	(0.145)	(0.148)	(0.219)	(0.220)
Unknown Mother's Edu.	0.165	0.192	0.130	0.138	11.171**	11.329**	-0.504	-0.608	0.439**	0.419**	0.136	0.106	0.770	0.677
	(0.544)	(0.549)	(0.159)	(0.156)	(4.130)	(4.162)	(0.365)	(0.366)	(0.144)	(0.142)	(0.367)	(0.365)	(0.553)	(0.543)
Age 15 Home Env.														
Access to computer at age 15	-0.155	-0.214*	-0.004	0.006	-0.263	-0.386	0.057	0.029	-0.030	-0.027	0.187**	0.152*	0.153	0.137
	(0.090)	(0.094)	(0.026)	(0.027)	(0.660)	(0.689)	(0.050)	(0.052)	(0.025)	(0.025)	(0.064)	(0.065)	(0.097)	(0.097)
Access to internet at age 15	-0.146	-0.083	-0.026	-0.018	0.734	0.399	0.105	0.056	-0.031	-0.050	-0.030	-0.045	-0.109	-0.172
	(0.130)	(0.133)	(0.038)	(0.038)	(0.961)	(0.990)	(0.085)	(0.087)	(0.036)	(0.036)	(0.092)	(0.094)	(0.139)	(0.139)
Access to magazines & books at age 15	-0.118	-0.135	-0.013	-0.012	-0.449	-0.392	-0.053	-0.066	-0.011	-0.015	0.092	0.081	0.005	-0.008
	(0.090)	(0.090)	(0.026)	(0.026)	(0.655)	(0.661)	(0.048)	(0.049)	(0.025)	(0.025)	(0.064)	(0.064)	(0.097)	(0.095)
Refugees in Jordan	-0.061	-0.071	-0.136**	-0.128*	0.904	0.952	-0.195*	-0.170	-0.096	-0.076	0.014	-0.031	-0.168	-0.176
	(0.174)	(0.176)	(0.051)	(0.050)	(1.262)	(1.281)	(0.096)	(0.098)	(0.049)	(0.049)	(0.125)	(0.125)	(0.190)	(0.186)
Parents' Age at birth														
Father's age at birth	0.075*	0.082*	0.003	0.003	0.279	0.227	0.035	0.028	0.011	0.009	-0.025	-0.033	0.000	-0.012
	(0.035)	(0.036)	(0.010)	(0.010)	(0.260)	(0.263)	(0.018)	(0.018)	(0.010)	(0.010)	(0.025)	(0.025)	(0.038)	(0.037)

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Father's age at birth squared/100	-0.096*	-0.102*	-0.002	-0.003	-0.345	-0.268	-0.026	-0.018	-0.009	-0.007	0.026	0.038	0.001	0.019
	(0.048)	(0.048)	(0.014)	(0.014)	(0.350)	(0.354)	(0.024)	(0.024)	(0.013)	(0.013)	(0.033)	(0.033)	(0.050)	(0.050)
Don't Know Father's age at birth	0.836	0.962	0.094	0.095	6.162	5.222	0.746*	0.630	0.259	0.247	-0.506	-0.666	0.027	-0.177
	(0.691)	(0.695)	(0.202)	(0.198)	(5.139)	(5.169)	(0.360)	(0.362)	(0.192)	(0.188)	(0.490)	(0.485)	(0.738)	(0.722)
Mother's age at birth	-0.048	-0.065	-0.030*	-0.026*	0.533	0.524	-0.027	-0.028	-0.003	0.002	0.041	0.045	0.003	0.021
	(0.045)	(0.045)	(0.013)	(0.013)	(0.329)	(0.334)	(0.023)	(0.024)	(0.012)	(0.012)	(0.032)	(0.031)	(0.048)	(0.047)
Mother's age at birth squared/100	0.062	0.085	0.047*	0.039	-0.793	-0.798	0.041	0.043	0.006	-0.005	-0.049	-0.061	0.015	-0.024
	(0.075)	(0.076)	(0.022)	(0.022)	(0.555)	(0.563)	(0.039)	(0.039)	(0.021)	(0.021)	(0.053)	(0.053)	(0.080)	(0.079)
Don't know mother's age at birth	-0.740	-0.838	-0.267	-0.218	8.102	8.009	-0.211	-0.195	0.019	0.122	0.577	0.612	0.262	0.518
	(0.716)	(0.722)	(0.210)	(0.206)	(5.398)	(5.462)	(0.383)	(0.386)	(0.199)	(0.195)	(0.507)	(0.503)	(0.765)	(0.749)
Father's Emp. Stat. (Blue Coll. Informal Omit.)														
Formal Professional Father	0.155	0.084	0.070	0.050	-1.824	-1.864	0.034	0.063	0.036	0.030	0.065	0.035	0.184	0.162
	(0.188)	(0.189)	(0.055)	(0.054)	(1.359)	(1.370)	(0.103)	(0.104)	(0.051)	(0.050)	(0.131)	(0.130)	(0.197)	(0.193)
Employer Professional Father	0.075	0.063	0.170	0.164	-1.969	-2.019	-0.105	-0.029	-0.024	-0.032	0.236	0.228	0.119	0.129
	(0.340)	(0.343)	(0.101)	(0.100)	(2.579)	(2.611)	(0.194)	(0.195)	(0.098)	(0.097)	(0.251)	(0.249)	(0.378)	(0.371)
Informal Professional Father	-0.104	-0.166	0.146	0.114	2.140	1.547	-0.103	-0.083	-0.082	-0.033	-0.515	-0.482	-0.632	-0.521
	(0.460)	(0.466)	(0.134)	(0.133)	(3.259)	(3.313)	(0.254)	(0.258)	(0.158)	(0.157)	(0.405)	(0.404)	(0.609)	(0.600)
Formal Service Father	0.123	0.097	-0.014	-0.002	-2.346*	-2.439*	-0.059	0.012	-0.065	-0.048	-0.033	-0.008	-0.162	-0.088
	(0.148)	(0.149)	(0.043)	(0.043)	(1.079)	(1.088)	(0.083)	(0.084)	(0.041)	(0.040)	(0.103)	(0.103)	(0.156)	(0.153)
Employer Service Father	-0.025	-0.042	0.259***	0.237**	-2.327	-2.857	0.283*	0.281*	0.190**	0.154*	-0.021	-0.047	0.490	0.397
	(0.252)	(0.256)	(0.076)	(0.075)	(1.895)	(1.932)	(0.137)	(0.139)	(0.073)	(0.072)	(0.186)	(0.186)	(0.280)	(0.277)
Informal Service Father	0.211	0.164	0.037	0.048	0.431	0.095	0.134	0.185	0.033	0.045	0.061	0.031	0.176	0.180
	(0.224)	(0.227)	(0.065)	(0.065)	(1.652)	(1.670)	(0.123)	(0.125)	(0.065)	(0.064)	(0.165)	(0.165)	(0.251)	(0.247)
Formal Craft Father	-0.105	-0.125	-0.059	-0.043	-1.073	-1.417	-0.007	0.016	-0.038	-0.030	-0.086	-0.079	-0.119	-0.095
	(0.173)	(0.174)	(0.051)	(0.050)	(1.258)	(1.268)	(0.096)	(0.096)	(0.048)	(0.047)	(0.121)	(0.120)	(0.183)	(0.179)
Employer Craft Father	-0.116	-0.099	-0.037	-0.019	-1.642	-2.424	-0.073	-0.056	-0.004	-0.003	-0.049	-0.008	-0.088	-0.018
	(0.218)	(0.221)	(0.065)	(0.064)	(1.615)	(1.639)	(0.118)	(0.119)	(0.064)	(0.064)	(0.164)	(0.163)	(0.248)	(0.245)
Unknown father's Employment	0.024	-0.038	0.036	0.040	-3.260**	-3.231**	-0.025	0.014	-0.067	-0.049	0.142	0.144	-0.001	0.055
	(0.158)	(0.159)	(0.046)	(0.045)	(1.154)	(1.162)	(0.087)	(0.088)	(0.043)	(0.043)	(0.111)	(0.110)	(0.167)	(0.163)
Sex (Male Omit.)														
Female	0.506***	0.497***	-0.148***	-0.169***	-1.062	-0.842	-0.231***	-0.253***	-0.187***	-0.218***	-0.008	-0.041	-0.343***	-0.448***
	(0.080)	(0.086)	(0.023)	(0.025)	(0.588)	(0.626)	(0.046)	(0.048)	(0.022)	(0.023)	(0.057)	(0.060)	(0.087)	(0.089)
Basic Education														
Kindergarten Attendance		-0.103		-0.019		-0.250		0.065		0.031		0.056		0.164
		(0.084)		(0.024)		(0.619)		(0.046)		(0.023)		(0.058)		(0.087)

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Private Basic School		-0.022		0.015		0.951		0.068		0.037		0.023		0.098
		(0.124)		(0.036)		(0.914)		(0.066)		(0.033)		(0.085)		(0.127)
Secondary Education														
Private Secondary School		0.083		0.186***		-1.981		0.012		0.092*		0.166		0.377*
		(0.150)		(0.043)		(1.107)		(0.081)		(0.040)		(0.104)		(0.155)
Secondary specialization science		3.903		0.957		-54.691		-4.802		-0.279		0.885		4.196
		(4.875)		(1.394)		(35.640)		(2.751)		(1.324)		(3.393)		(5.071)
Secondary specialization tech		-1.663		-5.756		-11.985		-7.906		-5.276		-4.578		-10.236
		(10.396)		(3.007)		(92.198)		(10.260)		(3.145)		(8.110)		(12.050)
Rarely using Comp at Sec School		0.115		-0.045		0.400		0.097		-0.045		0.177*		0.051
		(0.120)		(0.034)		(0.873)		(0.059)		(0.033)		(0.084)		(0.125)
Sometimes using Comp at Sec School		0.247*		-0.043		1.168		0.137*		-0.048		0.039		-0.127
		(0.115)		(0.033)		(0.839)		(0.058)		(0.032)		(0.082)		(0.123)
Daily using Comp at Sec School		0.047		-0.163**		4.720**		0.208		-0.029		-0.104		-0.244
		(0.218)		(0.062)		(1.585)		(0.126)		(0.059)		(0.152)		(0.227)
Secondary Performance														
Age when graduated secondary		-0.014		-0.023		0.821*		-0.002		-0.013		-0.072*		-0.095*
		(0.041)		(0.012)		(0.321)		(0.033)		(0.011)		(0.029)		(0.042)
Secondary Final Grade		-0.046		0.020		-1.031		-0.139**		-0.018		-0.031		-0.057
		(0.084)		(0.024)		(0.623)		(0.052)		(0.023)		(0.060)		(0.089)
Sec Grade SQ/100		0.030		-0.012		0.614		0.086*		0.012		0.022		0.038
		(0.056)		(0.016)		(0.417)		(0.035)		(0.016)		(0.040)		(0.060)
Don't Know Sec Grade		0.515		0.603		-26.636		-5.157*		-0.307		-1.227		-1.718
		(3.444)		(0.983)		(25.356)		(2.061)		(0.942)		(2.415)		(3.608)
Interaction: Sec Grade & Sci Spec		-0.097		-0.028		1.364		0.118		0.004		-0.009		-0.107
		(0.130)		(0.037)		(0.948)		(0.073)		(0.035)		(0.090)		(0.135)
Interaction: Sec Grade & Tech Spec		0.008		0.156		-0.086		0.208		0.135		0.110		0.247
		(0.279)		(0.081)		(2.517)		(0.277)		(0.084)		(0.217)		(0.323)
Interaction: Sq-Sec Grade & Sci Spec		0.059		0.021		-0.849		-0.070		0.000		-0.000		0.074
		(0.085)		(0.024)		(0.626)		(0.048)		(0.023)		(0.059)		(0.089)
Interaction: Sq-Sec Grade &		0.023		-0.105		0.327		-0.132		-0.087		-0.062		-0.144

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Tech Spec														
		(0.185)		(0.054)		(1.704)		(0.186)		(0.056)		(0.144)		(0.215)
University Char. (Public Not Sel. Comm. Omit.)														
Private		-4.167		-1.236		15.927		-0.611		-2.269		6.929		2.919
		(7.828)		(2.258)		(57.478)		(4.327)		(2.150)		(5.536)		(8.236)
Selective		-0.132		0.011		-0.644		-0.023		0.020		-0.012		0.096
		(0.151)		(0.043)		(1.105)		(0.084)		(0.041)		(0.106)		(0.158)
Selective and Private		0.468		0.043		-0.555		-0.283		0.004		0.139		0.053
		(0.322)		(0.092)		(2.399)		(0.172)		(0.087)		(0.224)		(0.333)
IT		-11.399		-1.308		6.849		-4.152		-0.604		-2.781		-3.729
		(8.959)		(2.765)		(65.878)		(5.620)		(2.403)		(6.193)		(9.207)
Private and IT		18.780		3.546		-93.748		2.980		0.357		-2.155		-2.924
		(12.580)		(3.739)		(91.853)		(7.392)		(3.355)		(8.647)		(12.855)
Selective and IT		-0.337		0.049		-0.231		-0.072		0.022		0.290		0.244
		(0.232)		(0.067)		(1.730)		(0.131)		(0.063)		(0.162)		(0.242)
Selective Private and IT		-0.187		-0.044		-0.414		0.394		-0.024		-0.404		-0.390
		(0.536)		(0.153)		(3.898)		(0.288)		(0.144)		(0.370)		(0.550)
English Language		0.247		0.014		1.569		0.006		0.037		0.377**		0.376*
		(0.170)		(0.049)		(1.260)		(0.096)		(0.047)		(0.121)		(0.181)
Arabic and English Language		0.361***		-0.007		0.014		0.002		-0.002		0.175*		0.158
		(0.106)		(0.030)		(0.778)		(0.057)		(0.029)		(0.074)		(0.111)
Univ. Grade		0.013		-0.006		-0.927		0.013		-0.042		0.076		-0.033
		(0.128)		(0.038)		(0.925)		(0.069)		(0.035)		(0.091)		(0.135)
Univ. Grade Sq/100		-0.007		0.008		0.676		-0.000		0.033		-0.044		0.039
		(0.086)		(0.026)		(0.622)		(0.047)		(0.024)		(0.061)		(0.091)
Interaction: Univ. Grade & Priv. Comm.		0.119		0.033		-0.402		0.020		0.059		-0.191		-0.086
		(0.214)		(0.062)		(1.575)		(0.119)		(0.059)		(0.151)		(0.225)
Interaction: Univ. Grade & Priv. Comm. Sq/100		-0.084		-0.021		0.253		-0.016		-0.038		0.130		0.063
		(0.146)		(0.042)		(1.073)		(0.081)		(0.040)		(0.103)		(0.153)
Interaction: Univ. Grade & Priv. IT.		-0.093		-0.029		1.891		0.051		0.063		-0.074		0.075
		(0.212)		(0.061)		(1.527)		(0.115)		(0.057)		(0.146)		(0.217)
Interaction: Univ. Grade & Priv.		0.066		0.020		-1.243		-0.036		-0.039		0.062		-0.033

	Time to First Job		Wage in First Job		Annual % Ch. In Wage		Wage after Five Years		Current Wage		Current Job Quality		Current Job Wage & Qual.	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
IT. Sq/100														
		(0.143)		(0.041)		(1.029)		(0.078)		(0.038)		(0.098)		(0.146)
Interaction: Univ. Grade & Pub. IT.		0.306		0.032		-0.077		0.109		0.012		0.069		0.094
		(0.240)		(0.074)		(1.760)		(0.150)		(0.064)		(0.166)		(0.246)
Interaction: Univ. Grade & Pub. IT. Sq/100		-0.204		-0.021		-0.019		-0.070		-0.007		-0.044		-0.063
		(0.160)		(0.050)		(1.169)		(0.100)		(0.043)		(0.110)		(0.164)
Process Factors														
Pedagogy Factor		0.186		-0.007		-0.031		-0.043		0.026		-0.084		-0.023
		(0.109)		(0.031)		(0.792)		(0.071)		(0.029)		(0.075)		(0.112)
Accountability Factor		0.090		0.008		0.226		0.006		0.026		-0.066		0.004
		(0.105)		(0.030)		(0.769)		(0.067)		(0.028)		(0.073)		(0.109)
Perception Factor		-0.113		0.018		0.348		0.019		0.002		0.156**		0.176
		(0.088)		(0.025)		(0.635)		(0.057)		(0.023)		(0.060)		(0.090)
Work Exp.									0.049***	0.043***	0.098***	0.091***	0.159***	0.140***
									(0.009)	(0.009)	(0.022)	(0.022)	(0.033)	(0.033)
Work Exp. Sq.									-0.001*	-0.001*	-0.003**	-0.003*	-0.003	-0.003
									(0.000)	(0.000)	(0.001)	(0.001)	(0.002)	(0.002)
Constant	0.227	1.456	6.213***	5.767***	-8.316	51.738	5.471***	10.118**	5.628***	7.847***	5.095***	4.352	7.095***	11.264
	(0.700)	(5.793)	(0.205)	(1.683)	(5.170)	(42.356)	(0.367)	(3.339)	(0.204)	(1.601)	(0.521)	(4.118)	(0.785)	(6.134)
Governorates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
P-Model	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	1409	1409	1388	1388	1304	1304	913	913	1262	1262	1268	1268	1262	1262
R-squared	0.113	0.147	0.102	0.176	0.062	0.099	0.143	0.204	0.238	0.306	0.095	0.162	0.138	0.222
Adj. R-Sq.	0.087	0.098	0.076	0.128	0.032	0.043	0.104	0.131	0.212	0.260	0.064	0.107	0.108	0.171

Source: Authors' calculations based on the surveys of higher education graduates

Appendix 2: Job Quality Factor Analysis

Factor Analysis

Factor analysis is a data reduction technique that translates a number of related ordered or binary variables into one or more continuous 'factors.' Factor analysis uses the observed relationships between the different variables to identify the underlying latent variables that the factors represent. More than one factor may be identified from factor analysis.

The strength of the relationships a factor represents can be assessed by the eigenvalue. The relationship between an individual variable and a factor can be assessed based on the uniqueness; the higher the uniqueness the less closely related a variable is to the identified factor. The communality (the squared multiple correlation), which is 1-uniqueness, is used to construct factor loadings. These factor loadings determine the scoring coefficients, which generate the factor as the weighted sum of standardized versions of the variables.

For both Egypt and Jordan we construct a job quality factor, creating it separately for each country, for the current jobs of wage workers who were employed at the time of the interview. The job quality factors are based on a number of characteristics of the job, as reported by the respondent. These include whether or not the respondent had a contract or social security, whether the job was permanent, inside, or public, whether the respondent received a number of job benefits, whether the job involved technology, the type of skills the job required, job responsibilities, and job satisfaction. In all cases, higher values of the variables indicate a greater value of job quality. Table 9 and Table 10 present the factor analyses for Egypt and Jordan.

Egypt

The eigenvalue for the job quality factor in Egypt was 10.2.[8] All the different characteristics enter positively into the job quality factor, although with varying scoring coefficients. Contracts, social security, job benefits, technology use, skill requirements, and job satisfaction are all particularly important elements of the factor in Egypt.

Table 9. Job Quality Factor, Egypt

	Factor Loading	Uniqueness	Scoring Coefficient
Contract	0.512	0.738	0.043
Social Security	0.523	0.726	0.041
Permanent	0.419	0.825	0.020
Inside	0.124	0.985	0.005
Public	0.363	0.868	0.014

[8] In factor analysis, multiple factors can be identified. In this case, the job quality factor was the first factor identified with the highest eigenvalue. There were four other factors with eigenvalues greater than one, but while the first factor clearly identified a pattern related to job quality, the other factors did not.

	Factor Loading	Uniqueness	Scoring Coefficient
Current Job Benefits:			
Transport (allowance)	0.354	0.875	0.022
Meals (other allowance)	0.222	0.951	0.016
Paid vacation	0.553	0.694	0.045
Sick leave	0.583	0.661	0.068
Secure retirement	0.524	0.726	0.065
Severance pay	0.531	0.718	0.064
Overtime pay	0.469	0.780	0.035
Medical Insurance	0.578	0.666	0.070
Performance Pay	0.408	0.833	0.033
Use a computer	0.504	0.746	0.053
Use an internet connection	0.437	0.809	0.038
Work Requires Skills:			
Capability in your field	0.653	0.574	0.052
Familiarity with other specializations	0.528	0.721	0.047
Analytic skills	0.586	0.656	0.061
Negotiation	0.517	0.733	0.046
Information acquisition	0.593	0.649	0.066
Work under pressure	0.524	0.725	0.055
Handle multiple tasks	0.571	0.674	0.060
Manage time	0.552	0.696	0.051
Work cooperatively	0.510	0.740	0.046
Expressing thoughts	0.509	0.741	0.047
Using computers/internet	0.575	0.669	0.053
Promote/sell products	-0.038	0.999	0.004
Write reports/memos	0.541	0.708	0.042
Foreign language	0.429	0.816	0.033
Responsible for:			
Setting objectives	0.137	0.981	0.016
Setting goals	0.312	0.903	0.036
Identifying strategies	0.135	0.982	0.011
Determining methods	0.305	0.907	0.013
Satisfaction with:			
Job security	0.553	0.694	0.047
Pay	0.534	0.714	0.038
Type of work	0.690	0.524	0.068
Number of hours	0.690	0.524	0.086
Working time	0.702	0.507	0.096
Distance to work	0.465	0.784	0.017
Alignment between work and qualifications	0.643	0.587	0.065

Source: Authors' calculations based on the surveys of higher education graduates

Jordan

The eigenvalue for the job quality factor in Jordan was 7.0.[9] All the different characteristics enter positively into the job quality factor for Jordan, as in Egypt, although with varying scoring coefficients. Job benefits, technology use, skill requirements, and job satisfaction are all particularly important elements of the factor in Jordan.

Table 10. Job Quality Factor, Jordan

	Factor Loading	Uniqueness	Scoring Coefficient
Contract	0.071	0.995	0.008
Social Security	0.106	0.989	0.013
Permanent	0.083	0.993	0.007
Inside	0.071	0.995	0.001
Public	0.031	0.999	0.003
Current Job Benefits:			
Transport (allowance)	0.059	0.997	0.008
Meals (other allowance)	0.076	0.994	0.008
Paid vacation	0.170	0.971	0.027
Sick leave	0.225	0.949	0.031
Secure retirement	0.217	0.953	0.026
Severance pay	0.154	0.976	0.019
Overtime pay	0.227	0.949	0.024
Medical Insurance	0.170	0.971	0.020
Performance Pay	0.256	0.934	0.026
Other Services	0.136	0.981	0.010
Use a computer	0.320	0.898	0.052
Use an internet connection	0.327	0.893	0.047
Work Requires Skills:			
Capability in your field	0.648	0.581	0.080
Familiarity with other specializations	0.658	0.567	0.086
Analytic skills	0.710	0.496	0.105
Negotiation	0.614	0.623	0.080
Information acquisition	0.661	0.563	0.094
Work under pressure	0.610	0.627	0.079
Handle multiple tasks	0.646	0.582	0.093

[9] In factor analysis, multiple factors can be identified. In this case, the job quality factor was the first factor identified with the highest eigenvalue. There were four other factors with eigenvalues greater than one, but while the first factor clearly identified a pattern related to job quality, the other factors did not.

	Factor Loading	Uniqueness	Scoring Coefficient
Manage time	0.641	0.589	0.090
Work cooperatively	0.590	0.652	0.080
Expressing thoughts	0.629	0.604	0.085
Using computers/internet	0.578	0.666	0.067
Promote/sell products	0.471	0.778	0.058
Write reports/memos	0.631	0.601	0.078
Foreign language	0.567	0.678	0.071
Responsible for:			
Setting objectives	0.246	0.940	0.032
Setting goals	0.161	0.974	0.025
Identifying strategies	0.218	0.953	0.029
Determining methods	0.092	0.991	0.009
Satisfaction with:			
Job security	0.377	0.858	0.051
Pay	0.399	0.841	0.051
Type of work	0.442	0.805	0.066
Number of hours	0.322	0.896	0.049
Working time	0.324	0.895	0.045
Distance to work	0.181	0.967	0.014
Alignment between work and qualifications	0.437	0.809	0.056

Source: Authors' calculations based on the surveys of higher education graduates