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The determinants of job satisfaction in the Egyptian labor market

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Abstract

Purpose – This paper aims to analyze the determinants on job satisfaction in the Egyptian labor market, using Egypt's Labor Market Panel Survey (ELMPS), the wave of 2012.

Design/methodology/approach – Several determinants are analyzed including the wage level, the paid and sick leaves, the medical and social insurance, job stability among other individual and job characteristics. To this end, an ordered logit model is estimated to assess the significance of these different variables as determinants for job satisfaction.

Findings – The empirical findings indicate that wages and stability are major determinants for job satisfaction for the sample of wage workers. However, the results change according to gender; the hourly wage level affects men's level of job satisfaction, while it does not affect that of females. Furthermore, the job satisfaction of women is determined more by the job characteristics rather than the monetary compensation.

Social implications – The empirical findings shed light on the importance of formalizing jobs, as it has an effect on the level of job satisfaction of both women and men.

Originality/value – To the best of the authors' knowledge, this is the first paper to examine the determinants of job satisfaction for wage workers in Egypt using the ELMPS data.

Keywords Job satisfaction, Egypt, Wages, Logit, Labor market

Paper type Research paper

1. Introduction

The performance of businesses and labor market outcomes are highly affected by the level of employees' satisfaction. The well-being of the employees and higher job satisfaction result in better job performance, less absence incidences and lower turnover (Frey and Stutzer, 2002 and Javed *et al.*, 2014). Furthermore, Clark *et al.* (2014) found that the effect of job dissatisfaction goes beyond quitting, and further affects the retirement decisions of workers. The adverse

JEL classification – J0, J2, J3

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effect of job dissatisfaction on labor force participation is significant for men and women; nevertheless, women are facing a larger effect. Hence, job satisfaction affects productivity levels, turnover rates and labor force participation rates. Given this background, job satisfaction could be used as a proxy that measures the efficiency of labor market policies.

In Egypt, high turnover of labor is one of the key challenges facing companies, according to surveyed employers. The average turnover across large firms is 536 employees per year while in medium-sized firms, the turnover reaches 20 employees per year and in small-sized firms the average decreases to five employees annually (Ehab, 2015). Ehab (2015) indicated that the main reasons for this phenomenon are higher wages and better opportunities without any further explanation. As turnover is closely related to job satisfaction, as previously mentioned, it is expected that employees with higher wages, more stable jobs, access to benefits like paid and sick leaves and social security will witness higher levels of job satisfaction, and accordingly firms will witness less turnover rates.

Recently, economists have been interested in tackling the determinants of differences in individuals' reported job satisfaction, as this can help in identifying the impact of policies directly on individuals' well-being and indirectly on labor market outcomes. It has been argued that job satisfaction cannot be explained only with wage and working hours, but also with other job and workplace features such as promotion, job security, social security, health insurance and interpersonal relationships (D'Addio *et al.*, 2003). Thus, this paper adds to previous literature and tries to identify the main determinants of job satisfaction for wage workers in Egypt.

The studies on determinants of job satisfaction in Egypt are scarce. It has been tackled in Egypt by Barsoum (2014) and Roushdy and Assad (2008). On one hand, Barsoum (2014) tackled it from youth perspective and focused on their preference for government jobs using Egypt's Labor Market Panel Survey (ELMPS) 2012 round. On the other hand, Roushdy and Assad (2008) focused on the job quality among the non-wage workers in Egypt using the ELMPS 2006 round. However, to the best of our knowledge, no study tackled the determinants of job satisfaction for wage workers and the differences between males and females concerning these determinants. Hence, this paper fills this research gap, using the ELMPS 2012 survey results; an ordered logit model is estimated to analyze the determinants of job satisfaction. The determinants considered include travel time to job, working hours, medical insurance, social security, paid and sick leave, job stability and wage level. The model will control for individual and household characteristics. Moreover, we check if the results of our model would differ according to gender. In addition, a multinomial logit model is also estimated to check the robustness of our results.

The empirical findings indicate that wages and stability are major determinants for job satisfaction for the sample of wage workers. However, the results change according to gender; the hourly wage level affects males' level of job satisfaction, while it does not affect that of females. Furthermore, the job satisfaction of females is determined more by the job characteristics rather than the monetary compensation.

The rest of the paper is organized as follows. Section 2 outlines the literature review related to the main determinants of job satisfaction. Section 3 describes the data used in the empirical analysis specifically drawn from ELMPS 2012 and illustrates some descriptive patterns of job satisfaction and job quality. In Section 4, the methodology of ordered logit model is explained, and in Section 5, the results, analysis and robustness checks are presented. Section 6 concludes and provides some further discussions.

2. Literature review

Job satisfaction is determined based on interrelationship of objective employment conditions and subjective factors. The objective employment conditions (such as the social security

system, the child day care availability and quality, the working hours, etc.) affect labor supply. The subjective factors are an assessment of the objective conditions subjectively (for example, through comparisons between individuals). A combination of these two dimensions determines the level of job satisfaction of individuals. In this paper, we are only considering some of the objective employment conditions.

The objective employment conditions that determine the level of job satisfaction have been widely studied. Three groups of variables are identified to have an influence on job satisfaction, namely wages and compensation, job characteristics and individual characteristics. The first determinant of job satisfaction is the level of wages. The wage level has a direct effect on the level of income for individuals and hence affects their utility function (Gambacorta and Iannario, 2013; Ankudinov *et al.*, 2015). The better financial position result in higher satisfaction with both the type of work and job security (Millán *et al.*, 2011). The jobs with better wages are probably characterized by higher security rates.

Regarding the second group of job-related variables affecting job satisfaction, the literature includes factors such as job security and stability, number of working hours, leaves (paid and sick) and firm size among others. Job security and stability are often measured by having a permanent contract or being employed in the public sector. Having such characteristics are usually accompanied by higher levels of job satisfaction (Gambacorta and Iannario, 2013). With regard to firm size, Millán *et al.* (2011) found that firm size affects the level of employees' satisfaction. Employees in micro, small and medium enterprises (MSMEs) are more satisfied than employees in large firms. The reason behind this is that employees in MSMEs have more flexibility and work autonomy than their counterparts in large firms.

Working hours is a main determinant factor of job satisfaction. An increase in working hours is associated with higher wages. However, if the hours increase above a certain subjective threshold this will negatively affect the leisure-work balance. In this case, the marginal utility of leisure will exceed the marginal utility of work. This can result in dissatisfaction or turnover effects (Gambacorta and Iannario, 2013). In addition, there is a gender aspect to the working hours. Women appreciate lower working hours and associate it with higher satisfaction despite witnessing worse job quality. Van der Meer *et al.* (2016) suggested the implications on job quality and job satisfaction of women part time work. Working as part timers resulted in equal or more job satisfaction when compared to full time females. This was true after controlling for the worse job quality for part timers. Lower job quality is witnessed in lesser amounts of task discretion and greater frequency of repetitiveness. Their explanation of such job satisfaction despite lower job quality is the result of shorter working hours which lead to more family-work balance.

As to the individual characteristics, gender, age, marital status and educational attainment are among the variables affecting the level of job satisfaction. Gender differences are witnessed in job satisfaction, resulting from different expectations of males and females. It is expected that women might have higher level of job satisfaction as a result of lower expectations. Past job experience with bad conditions have forced women to lower their expectations. Hence, women might have higher job satisfaction; however, this does not mean that their jobs are better than the males (Kaiser, 2005). Furthermore, household income increases the probability of individuals' job satisfaction (Gambacorta and Iannario, 2013). An explanation is that people who are wealthier/have higher income are less likely to be worried about job security.

Previous research has showed that age has a non-linear U-shaped relationship with job satisfaction, where young and old workers experience high levels of satisfaction while middle-aged experience low levels of satisfaction. The level of satisfaction increase as people

age and transition from one organization to another (Riza *et al.*, 2015). In addition to age, marital status is considered one of the determinants of job satisfaction. However, the literature is not conclusive about its impact. Some studies estimate a positive relationship while others show the opposite. With respect to education, GÜRBÜZ (2007) found a positive relationship between educational attainment and the level of job satisfaction. On the contrary, Millán *et al.* (2011) found that employees with university education level are less satisfied compared to those with no education or primary education. On the same token, Gambacorta and Iannario (2013) and Tampieri (2010) found that education, in general, has an inverse relation with the level of job satisfaction. Two possible explanations were provided. First, employees with university education face a demanding job and high expectations from their managers. Second, individuals with higher education have high expectations regarding the work status. These expectations are not necessarily matched with real work conditions, yielding dissatisfaction.

To sum up, there are three categories of factors affecting the level of job satisfaction, namely monetary compensation, job characteristics and individual characteristics. Wages and compensation are expected to increase the level of job satisfaction. The working hours and age have a mixed effect on the level of satisfaction. On the other hand, an increase in educational attainment results in a decline in the level of job satisfaction. These are the categories that is examined in our model.

3. Data description

The data employed in the econometric analysis are drawn from the Egypt Labor Market Panel Survey (ELMPS) for the year 2012 (OAMDI, 2013). The ELMPS is carried out by the Economic Research Forum (ERF) in cooperation with Egypt's Central Agency for Public Mobilization and Statistics (CAPMAS). ELMPS 2012 is the third round of this longitudinal survey, which was also carried out in 1998 and 2006. However, we were not able to use the panel dimension of ELMPS given that the main variable of interest is not available in the 2006 wave. ELMPS 2012 includes 12,060 households with 49,186 individuals which makes it a nationally representative sample. ELMPS 2012 round includes a distinction between market and subsistence work. In addition, the survey has a number of questions that give various definitions of unemployment. It also reports some characteristics of the employers of respondents. It also asks respondents about their level of job satisfaction, social security, earnings, working hours and their commute time to work (our main variables) (Assad and Krafft, 2013). Hence, it is the most suitable dataset to be used for our analysis.

Our sample is confined only for wage workers, who constitute about 20.63 per cent of the total individuals surveyed in the ELMPS (2012). This means that we have excluded employer, self-employed and unpaid family worker. We have also excluded those who are younger than 18 years old, representing 1.96 per cent of the wage workers (199 observations). Hence, the sample size used is 9,948 wage workers out of total 49,186 individuals surveyed. Definitions for all variables used in the model are reported in Table AI in the Appendix.

The level of job satisfaction will be measured using the question in the ELMPS survey: how satisfied are you with your current job? The job characteristics included in the model comprise the hourly wage, number of working hours, the level of job formality and stability and the sector. The individual characteristics include age, gender, marital status and years of education. Regional characteristics, as well as household characteristics are also considered as contributing factors. The major difference in job satisfaction between groups can be seen between men and women, where women care more about the characteristics of the job. This is in line with the household responsibility theory that assumes that women have more responsibilities at home and thus prefer more flexible working conditions over higher pay rate.

Descriptive statistics of variables used in the model is presented in Table AII. Indicator of job satisfaction is our dependent variable. Those who reports being satisfied with their jobs represent 72 per cent of the respondents. All other variables presented in Table AI represent the independent variables. Out of the wage workers sample, 18 per cent are female. The average age of the respondent is 36 years old with 11 years of schooling. The average respondent hourly wage is approximately 6 pounds with 8 working hours per day. Approximately 55 per cent of the respondents are employed in the public sector or government. Almost half of the respondents are employed in informal jobs with either no contract or no social insurance, while 35 per cent of the respondents work on temporary, seasonal or casual basis.

Tables AIII, AIV and AV in the Appendix report the cross tabulation of job satisfaction with gender, sector of employment in addition to contract availability and stability. It can be seen that females are generally more satisfied compared to males where 86 per cent of females are satisfied with their jobs while 89 per cent of males report the same level of satisfaction. With respect to the sector of employment, employees in the public sector are more satisfied (approximately 91 per cent for both genders) compared to their counterparts in the private sector (67 per cent and 72 per cent for males and females respectively). The highest job satisfaction is recorded for those with contract and job stability (91 per cent) and the lowest job satisfaction is in the opposite case of no contract and being employed on temporary or seasonal basis (46 per cent).

4. Methodology

The main aim of this paper is to identify the job and workplace features lying behind the differences in subjectively reported job satisfaction by wage workers in Egypt. To achieve our objective, we follow D'Addio *et al.* (2003) and estimate an ordered logit model to analyze the relationship between job satisfaction on one hand, and job characteristics on the other. Nevertheless, we rely here on cross-sectional data rather than panel data. In addition, the Multinomial logit model is estimated as a robustness check.

According to Wooldridge (2010), the ordered logit model is used when we have an independent sample of data, where the dependent variable has more than two categories and the values of each category have a meaningful sequential order where a value is indeed "higher" than the previous one.

If y is an ordered response variable taking on the values 0; 1; 2; . . .; M. the derivation of the ordered logit model for y (conditional on explanatory variables x) comes from a latent variable model. The latent variable y is assumed to be determined by:

$$y_i^* = X_i' \beta + u_i$$

Allow

$a_1 < a_2 < \ldots < a_m$ be unknown cut points, and y is defined as follows
$y = 0$ if $y^* \leq a_1$
$y = 1$ if $a_1 < y^* \leq a_2$
.
.
.
$y = M$ if $y^* > a_m$

So, in our case, y represents the level of job satisfaction and has three categories which are dissatisfied, neutral and satisfied. This means that there are two cut points, a1 and a2. So,

when the level of satisfaction decreases below a1, then the job satisfaction variable takes the value 1 and so on for the rest of the categories.

Under the assumption of a logistic distribution of the error term, we compute the response probability for M number of the possible outcomes which yields the ordered logit model:

$$P(y = M \mid x) = P(a_{m-1} < y^* \leq a_m \mid x) = 1 - f(a_m - x\beta)$$

The dependent variable (*satisfaction*) is the level of individual's reported job satisfaction in 2012. To measure job satisfaction, we depend on ELMPS's question: "How satisfied you with your current job?", which has five outcomes (1:fully dissatisfied; 2: rather dissatisfied; 3: neither satisfied, nor dissatisfied; 4: rather satisfied; and 5: fully satisfied). Then, we merge related outcomes together – for simplicity – to have a new variable for job satisfaction with only three outcomes (1: dissatisfied; 2: neutral; and 3: satisfied). In addition, we add a set of explanatory variables which include the most prominent determinants of job satisfaction that are used in the literature. Also, data availability was one criterion behind our choice of these variables. They include hourly wage and some job characteristics as: number of working hours per day, travel time to work, social insurance, medical insurance, paid and sick leave vacations, and stability of the job. We expect that higher wage level, providing medical insurance and social security would have a significant positive impact on job satisfaction. Furthermore, we expect that travel time to job will be associated with less job satisfaction. Moreover, we add other individual and household controls including: age, age squared, gender, marital status, years of schooling, the region where the individual lives, household size and economic sector of the job.

5. Results and analysis

Table AVI in the Appendix displays the estimation results of our model. In column (1) the coefficients of the ordered logit model are reported, while in columns (2) and (3) the odds ratios and the marginal effects on the probability of being satisfied (satisfied = 3) are displayed respectively. We find that the overall model is highly significant, and most of the explanatory variables used are individually significant as well. Hourly wage, working hours per week, social insurance, the right to a sick leave and being in a permanent job have a positive and significant effect on the probability of the individual being in a higher degree of job satisfaction at 1 per cent significance level. Also, medical insurance and formality of the job (i.e. having a contract) have a positive and significant effect on job satisfaction at 5 per cent significance level.

From column (3), we find that if the hourly wage of the individual increases by 1 unit, the probability of being satisfied with the job rather than being neutral or dissatisfied increases by 0.048 holding all other variables constant. In addition, if the individual has a medical or a social insurance connected to his/her job the probability of being satisfied is higher by about 0.047 and 0.043 respectively. Moreover, having the right to a sick leave increase the probability of being satisfied by about 0.093, and being in a permanent work increase this probability by nearly 0.133. Furthermore, the probability of being satisfied with the current job is higher in formal jobs by about 0.04 compared to informal ones.

On the other hand, travel time to work and paid vacations have no significant impact on job satisfaction. This could be possibly explained by the idea that usually individuals make a tradeoff between wages and commuting time. So, they might choose jobs that pay higher wages but are further away from home. Also, individuals could be more concerned with the

benefits they get from their jobs (social and medical insurance, sick leaves, etc.) more than the commuting time.

As for the other control variables included, we find that the probability of being satisfied with the current job is lower for males compared to females by about 0.056, since the gender variable has a negative and significant coefficient at all significance levels. This finding goes along with previous research arguing that women in general are more satisfied with their positions, since they tend to have lower expectations concerning their jobs, which could be the result of their past experiences or be entrenched in the social norms.

The empirical results also show that married individuals have a higher level of job satisfaction compared to non-married individuals, keeping all other factors constant. Nevertheless, the odds of being satisfied for married individuals is 1.203 times greater than being neutral and dissatisfied compared to non-married. Besides, as wealth score increases the probability of being satisfied with the current job increases by about 0.024. One explanation behind the positive relation between wealth and job satisfaction, is that wealthy individuals tend to spend more time to find a suitable job, as they already have another source of income other than the wage. Thus, when they find this good job that would most probably be satisfied with it.

On the other hand, more years of schooling lowers the probability of job satisfaction by about 0.008. This result matches the findings of many previous studies (Clark and Oswald, 1996). It can be explained using the discrepancy theory, which argues that the individual who spend more years on education would most probably have more expectations towards his/her job that could exceed what the labor market offers. This results in a wider gap between their dream job and the actual job.

Additionally, an individual employed in the private sector has a lower probability of being satisfied than a government employee by nearly 0.089. This could be explained by the argument that jobs with the government (Ghinetti, 2007) are usually perceived as less risky and thus associated with higher levels of job satisfaction. Moreover, individuals living in urban upper Egypt have a higher probability of being satisfied with their jobs compared to individuals living in Cairo.

Thus, the results of our basic model indicate that job satisfaction in the Egyptian labor market is dependent on some of the job characteristics and the benefits associated with this job, including the hourly wage, working hours, social and medical insurance, sick leave vacation, stability and formality of the job. But it is worth mentioning that these results hinge on the specification of the model and the choice of the explanatory variables, so some checks should be conducted to be sure that our results are valid and robust.

As a robustness check, the relationship between job satisfaction and job quality has been estimated using multinomial logit model. Table AVII shows that our results are very robust to different specifications of the model. As a diagnostic test for the proportional odds assumption, the Brant test has been performed. We found that the assumption is violated; hence, we conducted a generalized ordered logit model. The results from this model are similar to the results of ordered logit (The results of both the test and the generalized ordered logit are not included).

In the next step, the model is estimated according to the gender of the employees. This is done to check if our results differ with respect to gender. Results are presented in Table AVIII. In column (1) the coefficients of the ordered logit model for males are reported, while in columns (2) and (3) the odds ratios and the marginal effects on the probability of being satisfied for males (satisfied = 3) are displayed respectively. We find that most of the variables are significant for males. Hourly wage, working hours per week and the right to sick leave have positive and significant effect on job satisfaction at 1 per cent significance

level. Also, medical and social insurance have a positive and significant effect on the males' probability of being in a higher degree of job satisfaction at 5 per cent significance level. In addition, wealth has a significant positive impact on the level of job satisfaction at 1 per cent significance level, while years of school has a negative significant impact at 1 per cent significance level.

From column (3), we find that we find that if the hourly wage of the individual increases by 1 unit, the probability of being satisfied with the job rather than being neutral or dissatisfied increases by 0.057 holding all other variables constant. In addition, if the male has a medical or a social insurance connected to his job the probability of being satisfied is higher by about 0.053 and 0.04, respectively. Moreover, having the right to a sick leave increases the probability of being satisfied by about 0.112. On the other hand, travel time to work and paid vacations have no significant impact on job satisfaction.

As for women, the coefficients are presented in column (4) and the odds ratio and marginal effects on the probability of being satisfied in the job are shown in columns (5) and (6), respectively. We find that a small number of the variables are significant for the women. The hourly wage does not have a significant effect on the level of job satisfaction of women. While working hours per week and social insurance have a positive and significant effect at 5 per cent significance level. From column (6), we find that if the female has a social insurance, the probability of being satisfied with the job rather than being neutral or dissatisfied increases by 0.079 holding all other variables constant. While job stability has a positive and significant effect at 1 per cent significance level.

The analysis by gender of the determinants of job satisfaction indicates that females are generally not affected by the monetary factors of the job but are more affected by the job characteristics of having a social insurance. On the other side, the males' job satisfaction is determined by most of the variables in the three categories of determinants, the monetary aspect, the job characteristics and the individual characteristics. This reflects that women have lower expectations due to previous experience or the culture in the hiring companies and in the families. This could be an area for future research that differentiates the results of females according to the household characteristics including the number of children and whether the household is male headed or female headed.

6. Conclusion

The performance of businesses and labor market outcomes are highly affected by the level of employees' satisfaction. Job satisfaction affects productivity levels, turnover rates and labor force participation rates. Hence, job satisfaction could be used as a measure for the efficiency of labor market policies. Identifying the determinants of job satisfaction can help in recognizing the impact of policies directly on individuals' well-being and indirectly on labor market outcomes. This paper provides an empirical analysis of the determinants of job satisfaction in Egypt using data from ELMPS 2012. We focused on the determinants of job satisfaction of wage workers specifically understanding the impact of wage compensation, job characteristics and individual characteristics through estimating an ordinal logit model. The model is estimated once for the whole sample and then for subsamples by gender.

In our analysis, the model results indicate the importance of the hourly wage on job satisfaction in the Egyptian labor market. In addition, the relevance of job security, such as stability and formality of the job in affecting workers' satisfaction. Other factors include social and medical insurance as well as sick leaves. A number of robustness checks have been conducted to ensure that the results are valid.

An interesting dimension appears when the sample is divided into subsamples of men and women. The analysis by gender of the determinants of job satisfaction indicates that

females are generally not affected by the monetary factors of the job but are more affected by the job characteristics such as having a social insurance. On the other side, the males' job satisfaction is determined by most of the variables in the three categories of determinants, the monetary aspect, the job characteristics and the individual characteristics. This result for Egyptian women is different compared to women in the United Arab Emirates where women's job satisfaction in UAE is affected by their age, education, and income (Shallal, 2011).

This sheds light on the importance of formalizing jobs as it has an effect on the level of job satisfaction of both females and males. This is of particular importance in the Egyptian economy since 50 per cent of the wage workers are in informal jobs with no contract or social insurance while 35 per cent are employed on temporary, seasonal or casual basis. Formalizing such jobs and hiring individuals on permanent basis will be reflected not only job satisfaction but potentially on turnover ratios, productivity and hence firms' performance. There is a dire need for labor market policies that incentivize employers to provide formal jobs on permanent basis with minimal cost on the employers' side.

An area for future research could be conducting a randomized control trial that gives different number of incentives for a random sample of firms to provide formal and stable jobs. Afterwards, the effect of each kind of incentive is measured specifically the extra costs bore by firms, the likelihood of changing the work conditions and the associated change in their performance. This study can propose the most effective incentive the government could adopt.

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Appendix

Variable	Definition
Satisfaction	Level of Job satisfaction: It is an ordinal variable that has 3 categories with a natural ordering, which are as follows: (1) Dissatisfied (2) Neutral (3) Satisfied
Hourly wage	Hourly Wage in primary job in L.E.
Job characteristics	
Medical ins.	A dummy variable that takes the value of 1 if the individual has medical insurance in his work (0 otherwise)
Social ins.	A dummy variable that takes the value of 1 if the individual has social insurance connected to his/her job (0 otherwise)
Paid vacation	A dummy variable that takes the value of 1 if the individual gets paid vacation in his/her job (0 otherwise)
Sick leave	A dummy variable that takes the value of 1 if the individual has the right to paid sick leave 0 otherwise)
Travel time to work	Travel time to work (in minutes) in primary job (reference 3 months)
Contract	A dummy variable that takes the value of 1 if the individual a legal work contract or formal appointment (0 otherwise), it signifies the formality of the work
Stability	A dummy variable that takes the value of 1 if the individual's job is permanent (0 otherwise; temporary or seasonal or casual)
No. of Hours/week	Number of working hours per week with a market work
Government	It equals 1 if the individual is working in the government (0 otherwise) (base group)
Public	It equals 1 if the individual is working in the public sector (0 otherwise)
Private	It equals 1 if the individual is working in the private sector (0 otherwise)
Investment	It equals 1 if the individual is working in an investment company(0 otherwise)
International	It equals 1 if the individual is working in an international company (0 otherwise)
Others	It equals 1 if the individual is working in other sectors than the previously mentioned (0 otherwise)
Individual and HH characteristics	
Age	The age of the individual surveyed in years
Male	A dummy variable that takes the value of 1 if the individual is male (0 if female)
Years of schooling	Years of Schooling
Not married	It equals 1 if the individual is not married (never married or less than the legal marriage age) (0 otherwise) (base group)
Married	It equals 1 if the individual is married (married or contractually married) (0 otherwise)
Divorced/widowed	It equals 1 if the individual is divorced or widowed (0 otherwise)
Household wealth	Household wealth score
Household size	Household size
Regional characteristics	
Gr.Cairo	It equals 1 if the region where the individual lives is Greater Cairo (0 otherwise)
AlexSuez	It equals 1 if the region is Alexandria and Suez Canal (0 otherwise)
UrbanLower	It equals 1 if the region is Urban Lower Egypt (0 otherwise)
UrbanUpper	It equals 1 if the region is Urban Upper Egypt (0 otherwise)
RuralLower	It equals 1 if the region is Rural Lower Egypt (0 otherwise)
RuralUpper	It equals 1 if the region is Rural Upper Egypt (0 otherwise) (base group)

Table AI.
Variables definitions

Variable	Obs.	Mean	SD	Min	Max
Satisfaction	9948	2.547	0.766	1	3
Hourly wage	9943	6.413	12.017	0.214	807.692
Job characteristics					
Medical ins.	9948	0.478	0.500	0	1
Social ins.	9948	0.510	0.500	0	1
Paid vacation	9947	0.496	0.500	0	1
Sick leave	9947	0.483	0.500	0	1
Travel time to work	9727	32.214	35.395	1	300
Contract	9947	0.504	0.500	0	1
Stability	9948	0.651	0.477	0	1
No. of Hours/Day	9848	8.393	2.248	1	24
Public	9948	0.049	0.215	0	1
Private	9948	0.562	0.496	0	1
Investment	9948	0.019	0.135	0	1
International	9948	0.001	0.032	0	1
Others	9948	0.005	0.069	0	1
Individual and HH characteristics					
Age	9948	35.807	10.996	18	76
Gender (male = 1)	9948	0.821	0.383	0	1
Years of School	9935	10.506	4.760	0	21
Married	9948	0.757	0.429	0	1
Divorced	9948	0.012	0.109	0	1
Widowed	9948	0.014	0.116	0	1
Household wealth	9948	0.085	0.932	−2.646	4.249
Household size	9948	4.601	1.988	1	21
Regional characteristics					
Gr.Cairo	9948	0.130	0.336	0	1
AlexSuez	9948	0.101	0.302	0	1
UrbanLower	9948	0.119	0.323	0	1
UrbanUpper	9948	0.150	0.357	0	1
RuralLower	9948	0.279	0.449	0	1

Table AII.
Summary statistics

Table AIII.
Job satisfaction level according to gender

Satisfaction	(1) Female Frequency (%)	(2) Male Frequency (%)
(1) Dissatisfied	148*** (8.324)	1,536*** (18.80)
(2) Neutral	99*** (5.568)	1,044*** (12.78)
(3) Satisfied	1,531*** (86.11)	5,590*** (68.42)
Total	1,778	8,170

Notes: Standard errors in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table AIV.
Job satisfaction level in the public* and the private sector**

Satisfaction	(1) Private Female Frequency (%)	(2) Private Male Frequency (%)	(3) Public Female Frequency (%)	(4) Public Male Frequency (%)
(1) Dissatisfied	56*** (16.09)	597*** (19.45)	73*** (5.325)	143*** (5.213)
(2) Neutral	42*** (12.07)	430*** (14.01)	47*** (3.428)	119*** (4.338)
(3) Satisfied	250*** (71.84)	2,042*** (66.54)	1,251*** (91.25)	2,481*** (90.45)
Total	348	3,069	1,371	2,743

Notes: *Represents those employed in the public sector and government.;**represents those employed in the private and international sector; standard errors in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table AV.
Job satisfaction, contract availability and stability

Satisfaction	(1) No contract No stability Frequency (%)	(2) No contract stability Frequency (%)	(3) contract No stability Frequency (%)	(4) contract stability Frequency (%)
(1) Dissatisfied	1,023*** (33.55)	352*** (18.66)	75*** (17.56)	234*** (5.104)
(2) Neutral	616*** (20.20)	283*** (15.01)	63*** (14.75)	181*** (3.948)
(3) Satisfied	1,410*** (46.24)	1,251*** (66.33)	289*** (67.68)	4,170*** (90.95)
Total	3,049	1,886	427	4,585

Notes: Standard errors in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Variables	(1) Coefficients	(2) Odds ratio	(3) Marginal effects
Hourly wage	0.305*** (0.042)	1.356*** (0.058)	0.048*** (0.007)
Job characteristics			
Medical ins.	0.293** (0.127)	1.340** (0.170)	0.047** (0.021)
Social ins.	0.266*** (0.099)	1.305*** (0.130)	0.043*** (0.016)
Paid vacation	−0.076 (0.139)	0.927 (0.129)	−0.012 (0.022)
Sick leave	0.574*** (0.146)	1.775*** (0.260)	0.093*** (0.024)
Travel time to work	0.001 (0.001)	1.001 (0.001)	0.000 (0.000)
Contract	0.240** (0.117)	1.271** (0.149)	0.038** (0.019)
Stability	0.778*** (0.061)	2.178*** (0.132)	0.133*** (0.011)
No. of Hours/Week	0.006*** (0.002)	1.006*** (0.002)	0.001*** (0.000)
Public	−0.132 (0.168)	0.876 (0.148)	−0.019 (0.025)
Private	−0.559*** (0.108)	0.572*** (0.062)	−0.089*** (0.017)
Investment	−0.265 (0.225)	0.767 (0.172)	−0.040 (0.035)
International	−0.001 (0.821)	0.999 (0.820)	−0.000 (0.118)
Other	−0.810** (0.361)	0.445** (0.160)	−0.134** (0.066)
Individual and HH characteristics			
Age	−0.048*** (0.017)	0.953*** (0.016)	0.000 (0.001)
Age sq.	0.001*** (0.000)	1.001*** (0.000)	
Male	−0.364*** (0.091)	0.695*** (0.064)	−0.056*** (0.014)
Years of School	−0.048*** (0.007)	0.953*** (0.006)	−0.008*** (0.001)
Married	0.185*** (0.072)	1.203*** (0.086)	0.030** (0.012)
Divorced/widowed	−0.130 (0.191)	0.878 (0.168)	−0.021 (0.032)
Household wealth score	0.156*** (0.039)	1.168*** (0.045)	0.024*** (0.006)
Household size	0.004 (0.012)	1.004 (0.012)	0.001 (0.002)
Regional characteristics			
Alx, Sz C.	0.104 (0.115)	1.109 (0.128)	0.017 (0.018)
Urban Lower	0.048 (0.106)	1.049 (0.111)	0.008 (0.017)
Urban Upper	0.416*** (0.107)	1.516*** (0.163)	0.064*** (0.016)
Rural Lower	−0.001 (0.094)	0.999 (0.093)	−0.000 (0.015)
Rural Upper	0.125 (0.103)	1.133 (0.117)	0.020 (0.016)
Constant cut1	−1.687*** (0.349)	0.185*** (0.065)	
Constant cut2	−0.878** (0.349)	0.415** (0.145)	
Observations	9,613	9,613	9,613

Notes: Standard errors in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table AVI. Ordered logit estimation results for determinants of job satisfaction

Table AVII.
Multinomial logit estimation results for determinants of job satisfaction

Variables	Dissatisfied (1) Coefficients	(2) Odds ratio	Neutral (3) Coefficients	(4) Odds ratio	(5) Marginal effects
Hourly wage	−0.359*** (0.053)	0.698*** (0.037)	−0.150** (0.059)	0.861** (0.050)	0.043*** (0.007)
Job characteristics					
Medical ins.	−0.335** (0.161)	0.715** (0.115)	−0.179 (0.180)	0.837 (0.151)	0.043** (0.021)
Social ins.	−0.402*** (0.126)	0.669*** (0.084)	−0.019 (0.138)	0.981 (0.136)	0.038** (0.017)
Paid vacation	0.135 (0.168)	1.144 (0.192)	−0.090 (0.207)	0.914 (0.189)	−0.007 (0.022)
Sick leave	−0.721*** (0.180)	0.486*** (0.088)	−0.220 (0.214)	0.802 (0.172)	0.081*** (0.025)
Travel time to work	−0.001 (0.001)	0.999 (0.001)	−0.002* (0.001)	0.998* (0.001)	0.000 (0.000)
Contract	−0.190 (0.144)	0.827 (0.119)	−0.404** (0.170)	0.667** (0.114)	0.045** (0.020)
Stability	−0.870*** (0.075)	0.419*** (0.031)	−0.703*** (0.086)	0.495*** (0.043)	0.137*** (0.011)
No. of Hours/Week	−0.007*** (0.002)	0.993*** (0.002)	−0.005** (0.002)	0.995** (0.002)	0.001*** (0.000)
Public	−0.094 (0.235)	0.910 (0.214)	0.505** (0.225)	1.656** (0.373)	−0.022 (0.026)
Private	0.423*** (0.137)	1.527*** (0.210)	0.861*** (0.156)	2.366*** (0.370)	−0.095*** (0.018)
Investment	0.126 (0.284)	1.135 (0.322)	0.515 (0.328)	1.674 (0.549)	−0.041 (0.036)
International	−0.280 (1.106)	0.755 (0.836)	0.647 (1.093)	1.910 (2.087)	−0.019 (0.128)
Other	0.390 (0.525)	1.477 (0.775)	1.481*** (0.441)	4.396*** (1.939)	−0.152** (0.070)

(*continued*)

Table AVII.

Variables	Dissatisfied (1) Coefficients	Dissatisfied (2) Odds ratio	Neutral (3) Coefficients	Neutral (4) Odds ratio	(5) Marginal effects
Individual and HH characteristics					
Age	0.049** (0.022)	1.050** (0.023)	0.085*** (0.024)	1.089*** (0.026)	−0.000 (0.001)
Age sq.	−0.001*** (0.000)	0.999*** (0.000)	−0.001*** (0.000)	0.999*** (0.000)	
Male	0.434*** (0.116)	1.543*** (0.178)	0.266** (0.130)	1.305** (0.170)	−0.055*** (0.014)
Years of School	0.064*** (0.008)	1.066*** (0.009)	0.019** (0.009)	1.019** (0.009)	−0.007*** (0.001)
Married	−0.198** (0.088)	0.821** (0.072)	−0.273*** (0.102)	0.761*** (0.078)	0.037*** (0.012)
Divorced/widowed	0.300 (0.234)	1.350 (0.315)	−0.243 (0.282)	0.784 (0.221)	−0.016 (0.033)
Household wealth score	−0.184*** (0.048)	0.832*** (0.040)	−0.131** (0.054)	0.877** (0.048)	0.025*** (0.006)
Household size	−0.002 (0.015)	0.998 (0.015)	−0.008 (0.017)	0.992 (0.017)	0.001 (0.002)
Regional characteristics					
Alx, Sz C.	0.044 (0.140)	1.045 (0.146)	−0.624*** (0.177)	0.536*** (0.095)	0.029 (0.019)
Urban Lower	−0.117 (0.136)	0.890 (0.121)	0.145 (0.144)	1.156 (0.166)	−0.000 (0.018)
Urban Upper	−0.446*** (0.135)	0.640*** (0.086)	−0.444*** (0.152)	0.642*** (0.098)	0.068*** (0.017)
Rural Lower	0.005 (0.118)	1.005 (0.118)	0.062 (0.130)	1.064 (0.138)	−0.005 (0.016)
Rural Upper	−0.132 (0.129)	0.876 (0.113)	−0.077 (0.144)	0.926 (0.133)	0.017 (0.017)
Constant	−1.249*** (0.436)	0.287*** (0.125)	−2.777*** (0.493)	0.062*** (0.031)	
Observations	9,613	9,613	9,613	9,613	9,613

Notes: Standard errors in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table AVIII.
Ordered logit estimation results for determinants of job satisfaction by gender

	Male			Female		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Coefficients	Odds ratio	Marginal effects	Coefficients	Odds ratio	Marginal effects
Hourly wage	0.336*** (0.046)	1.400*** (0.065)	0.057*** (0.008)	0.148 (0.120)	1.159 (0.139)	0.014 (0.012)
Job characteristics						
Medical ins.	0.310** (0.137)	1.363** (0.187)	0.053** (0.024)	0.063 (0.339)	1.065 (0.361)	0.006 (0.034)
Social ins.	0.233** (0.106)	1.262** (0.133)	0.040** (0.018)	0.707** (0.299)	2.028** (0.607)	0.079** (0.038)
Paid vacation	−0.195 (0.153)	0.823 (0.126)	−0.033 (0.025)	0.585* (0.347)	1.795* (0.623)	0.064 (0.043)
Sick leave	0.645*** (0.161)	1.907*** (0.306)	0.112*** (0.028)	0.082 (0.373)	1.086 (0.404)	0.008 (0.038)
Travel time to work	0.001 (0.001)	1.001 (0.001)	0.000 (0.000)	−0.004 (0.004)	0.996 (0.004)	−0.000 (0.000)
Contract	0.248* (0.129)	1.282* (0.166)	0.043* (0.022)	0.149 (0.290)	1.161 (0.336)	0.015 (0.030)
Stability	0.775*** (0.064)	2.170*** (0.140)	0.141*** (0.012)	0.822*** (0.194)	2.275*** (0.441)	0.095*** (0.026)
No. of Hours/Week	0.006*** (0.002)	1.006*** (0.002)	0.001*** (0.000)	0.015** (0.007)	1.015** (0.007)	0.002** (0.001)
Public	−0.090 (0.185)	0.914 (0.169)	−0.014 (0.029)	−0.609 (0.428)	0.544 (0.233)	−0.069 (0.055)
Private	−0.656*** (0.121)	0.519*** (0.063)	−0.111*** (0.020)	0.072 (0.268)	1.075 (0.288)	0.007 (0.025)
Investment	−0.280 (0.246)	0.756 (0.186)	−0.045 (0.041)	−0.444 (0.583)	0.641 (0.374)	−0.048 (0.070)
International	−0.116 (0.828)	0.890 (0.737)	−0.018 (0.131)	10.063 (473.483)	23,460.673 (11108234.650)	0.139*** (0.014)
Other	−1.155** (0.458)	0.315** (0.144)	−0.208** (0.091)	−0.369 (0.589)	0.691 (0.407)	−0.039 (0.068)
Individual and HH characteristics						
Age	−0.048*** (0.018)	0.953*** (0.017)	−0.000 (0.001)	−0.053 (0.058)	0.948 (0.055)	0.001 (0.001)
Age sq.	0.001*** (0.000)	1.001*** (0.000)		0.001 (0.001)	1.001 (0.001)	

(*continued*)

Table AVIII.

Variables	(1) Coefficients	Male (2) Odds ratio	(3) Marginal effects	(4) Coefficients	Female (5) Odds ratio	(6) Marginal effects
Years of School	−0.053*** (0.007)	0.949*** (0.007)	−0.009*** (0.001)	0.006 (0.023)	1.006 (0.023)	0.001 (0.002)
Married	0.177** (0.077)	1.193** (0.092)	0.030** (0.013)	0.435** (0.213)	1.545** (0.329)	0.046* (0.024)
Divorced/widowed	−0.405 (0.285)	0.667 (0.190)	−0.073 (0.052)	0.290 (0.309)	1.337 (0.413)	0.032 (0.033)
Household wealth score	0.164*** (0.042)	1.178*** (0.050)	0.028*** (0.007)	0.095 (0.106)	1.099 (0.116)	0.009 (0.010)
Household size	0.004 (0.013)	1.004 (0.013)	0.001 (0.002)	−0.003 (0.048)	0.997 (0.048)	−0.000 (0.005)
Regional characteristics						
Alx, Sz C.	0.141 (0.128)	1.151 (0.147)	0.024 (0.022)	−0.119 (0.268)	0.888 (0.238)	−0.014 (0.031)
Urban Lower	0.001 (0.115)	1.001 (0.115)	0.000 (0.020)	0.256 (0.280)	1.291 (0.361)	0.027 (0.029)
Urban Upper	0.366*** (0.116)	1.442*** (0.167)	0.061*** (0.019)	0.790*** (0.303)	2.204*** (0.667)	0.072*** (0.027)
Rural Lower	−0.031 (0.101)	0.969 (0.098)	−0.005 (0.017)	0.138 (0.251)	1.147 (0.289)	0.015 (0.027)
Rural Upper	0.076 (0.110)	1.079 (0.119)	0.013 (0.019)	0.610* (0.343)	1.841* (0.632)	0.058* (0.032)
Constant cut1	−1.492*** (0.372)	0.225*** (0.084)		−0.168 (1.167)	0.845 (0.986)	
Constant cut2	−0.668* (0.372)	0.513* (0.191)		0.520 (1.167)	1.681 (1.962)	
Observations	7,876	7,876	7,876	1,737	1,737	1,737

Notes: Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

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