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Abstract

The present paper intends to identify the main driving factors of the distribution of welfare in Tunisia and Egypt. We present a regression-based method to compare the labor market and demographic characteristics in both countries, as well as their impact on the distribution of consumption expenditures. For this, we develop a welfare generation model to generate estimates for the contribution of different demographics and labor characteristics for each country to welfare. This allows us to capture differences in both returns in employment and demographic characteristics. In this paper, we present the welfare generation model and its estimation results. These suggest that the most relevant factors in explaining the distribution of welfare are similar in Tunisia and Egypt. Some specific characteristics, such as education and regional characteristics, have a different impact in each country.

JEL Classification: I3

Keywords: Welfare; Demographics and Labor Characteristics; Tunisia; Egypt

ملخص

وتنوي هذه الورقة إلى تحديد العوامل الرئيسية الدافعة للتوزيع الرعاية الاجتماعية في تونس ومصر. ونحن نقدم وسيلة القائم على الانحدار مقارنة سوق العمل والخصائص الديموغرافية في كلا البلدين، وكذلك تأثيرها على توزيع نفقات الاستهلاك. لهذا، ونحن نطور نموذج الجيل الرعاية لتوليد تقديرات للمساهمة التركيبة السكانية المختلفة وخصائص العمل في كل بلد على الرعاية الاجتماعية. وهذا يسمح لنا لالتقاط الفروق في كل من العائدات في العمل والخصائص الديموغرافية. في هذه الورقة، ونحن تقديم نموذج الجيل الرعاية والنتائج تقديره. هذه تشير إلى أن العوامل الأكثر أهمية في شرح توزيع الرفاه مماثلة في تونس ومصر. بعض خصائص محددة، مثل التعليم والخصائص الإقليمية، يكون لها تأثير مختلف في كل بلد.

1. Introduction

Income inequality represents one of the main concerns in the world today. At the 2011 World Economic Forum, it has been identified as one of the "two most serious challenges in the world" (Elst & Davis, 2011). Income inequality has been continuously increasing since the 1980s in both advanced and less advanced economies. World income inequality has also increased (Milanovic, 2005, The Conference Board of Canada, 2011, World Bank, 2011, OECD, 2011). One of the most surprising facts, however (as noted in Milanovic, 1998, World Bank, 2005, Bourguignon et al., 2007, Autor et al., 2008 and the World Bank, 2011), is that the variation in income inequality across countries is considerably larger than the variation in inequality over time in any country. Effectively, variations in the Gini coefficients for household disposable income are high, ranging from a low of 0.248 in Denmark to a high of .378 in the US (OECD, 2011), and further reach 0.71 in Namibia (World Bank, 2005).

Different levels of inequality not only have an impact on the welfare of individuals, but also for the future institutional developments of countries and their economic prospects. This is of particular relevance for countries witnessing important transitions, such as post-revolutionary countries, where the future of institutions is likely to have an impact on the development process (Engerman and Sokoloff, 1997). Tunisia and Egypt represent a good illustration of this issue. Recently, the MENA region has been experiencing what has come to be called the "Arab Spring" -- a wave of revolutionary protests and demonstrations. The Tunisian revolution quickly sparked a wave of major uprisings in the region, starting from Egypt and spreading to other countries, such as Libya and Syria among others. Not surprisingly, the fuel of uprisings in these countries finds its main sources in inequality, in its various dimensions. Still, inequality patterns in the region are also different (Bibi and Nabli, 2009). As shown in El Laithy (2012) Countries such as Morocco and Tunisia show relatively high inequality levels, while others, such as Egypt, show moderate to low inequality levels. Despite this, little is known about the sources of the differences in household welfare distribution across the MENA region countries.

Our paper aims to fill part of this gap, on the one hand, by giving a snapshot of inequality in Tunisia and Egypt, and on the other hand, by exploring the driving factors of welfare in these two Northern African post-revolutionary countries. To what extent do labor market factors, education and demographics explain the cross-national differences in welfare distribution across countries with different labor market institutions, welfare systems and demographics? These aspects are of particular relevance for policy making, given that Egypt and Tunisia are going through important economic, social and political transformations. These types of studies are necessary for informing policy makers about appropriate policy measures for reducing inequality and increasing welfare, highly relevant for these countries' strategy of "combating poverty and social exclusion." Besides, current levels of inequality have short-term and long-term implications for welfare, social cohesion, social unrest, growth and development.

Microeconomics suggests that the diversity in outcomes in terms of income distribution and inequality results from various factors that arise from the interaction of a number of underlying social and economic variables. If it is difficult to precisely identify the mechanisms behind the dynamics of income distribution, the analysis of their nature represents a real opportunity to understand the transformation process and the desired direction of policy intervention concerning the distributional issues.

A number of recent studies have analyzed inequality in the MENA region. Such contributions include Bibi and El-Lahga (2010), Zouari-Bouattour and Jallouli (2001) for Tunisia, El Laithy et al. (2003) for Egypt, Said and El-Hamidi (2005), Kheir El-Din and El-Laithy (2008) for Egypt and Ayadi et al. (2005) for Tunisia. Bibi and El-Lahga (2010) analyze income distribution in six Arab countries (Jordan, Mauritania, Morocco, Syria, Tunisia, United Arab

Emirates and Yemen) by decomposing overall inequality indices by population subgroups. Bibi and Nabli, 2010 provide a comprehensive picture of inequality in the Arab region.

In general, the driving forces of inequality have extensively been studied in the literature. Studies of this type investigate the inter-temporal changes in income inequality or its components. According to the, Kuznetz hypothesis, factors like economic growth and shifts in demand are identified as being among the main causes of the increase in earnings inequality (Freeman and Katz, 1994; Fortin and Lemieux, 1997; Gottschalk and Smeeding, 1997; Katz and Autor, 1999; Card & Di Nardo, 2002). This literature suggests that cross-national differences in household disposable income inequality are mainly explained by country differences in institutions and market forces. Each country has its own institutions, market, demographics, tax-benefit system, behavioral responses and cultural and historical differences (Alesina & Glaeser, 2005). This certainly explains that at the same time, each country has its own level of household disposable income inequality.

Macroeconometric cross-country regressions, relying primarily on aggregated data, can inform us about average relationships between measures of income dispersion and other indicators of economic performance (such as economic growth). By contrast, the microeconometric approach, relying on fully disaggregated data from household surveys, allows for more specific country analysis. Since the seminal work by Atkinson (1970) on inequality measurement, microeconometric empirical literature has evolved into several distinct approaches. The empirical literature investigating the nature of the cross-national differences in household disposable income inequality focuses essentially on comparing decompositions of the Generalized Entropy inequality measures by population subgroups, which allows emphasizing the nature of the differences in inequality between countries (Bourguignon et al. 2007). Decomposing income inequality is broadly divided in two main categories. The first one relies on decomposing income between subgroups of the population (Shorrocks, 1984). Total inequality is presented as the sum of “within groups” and “between groups” levels of inequality. See for instance Bourguignon (1979) and Shorrocks (1980). The second approach consists of decomposing income sources into different factors with an emphasis on the contribution of these components to total income inequality (Shorrocks, 1982). Both methods, however, do not tell us about the contribution of individual determinants to income inequality.

The present paper focuses on the determinants of the observed welfare distribution in Tunisia and Egypt. It is based on comparing the contribution of several individual and household factors to in both countries through a regression-based methodology. As far as we know, there is no study that explores the sources of the differences in welfare distribution across Tunisia and Egypt using comparable data. In line with the approach developed by Bourguignon et al. (2007), we develop and estimate a household Welfare Generation Model (WGM) in order to assess differences in the welfare distribution between the two countries due to labor market and demographic characteristics.

Our research work is timely. Indeed, getting insight into the sources of welfare in the countries of the analysis is particularly useful since, on the one hand, it will help in understanding the sources of welfare disparity, and on the other hand, it will help in designing better redistributive policies.

The comparisons of welfare distributions in Tunisia and Egypt are based on household level data sets from the nationally representative surveys, harmonized by the Economic Research Forum (ERF), namely: (1) Egypt - Household Income, Expenditure, and Consumption Survey, 2010/2011(HIECS, 2010/2011); and (2) Tunisia - National Survey on Household Budget, Consumption and Standard of Living, 2010 (EBCNV, 2010).

This paper is organized as follows. Section two highlights some inequality patterns in Egypt and Tunisia. Section three describes the methodology used in this paper, namely the welfare

generation model, and describes the estimation procedures. Section four uses results from the WGM in order to compare labor market and employment patterns in Egypt and Tunisia. Section five uses results from the WGM to assess how different individual and household characteristics explain the distribution of welfare in each country. Finally, section six concludes and presents the next steps of the analysis.

2. Patterns of Inequality in Egypt and Tunisia

As already mentioned in the introduction, inequality is one of the main sources of social unrests in Tunisia and Egypt. Still, inequality trends, and consequently the distribution of welfare, are also different between the two countries. According to Table 1 below, in 2010, inequality was higher in Tunisia than in Egypt, with corresponding Gini coefficients of 0.36 and 0.28 respectively. The other indices reported in the table confirm the country ranking.

Both Tunisian and Egyptian uprisings shed light on poor performance in terms of social and economic conditions and the high regional disparities due to inadequate public policies and the high centrality of the State. At the same time, specific economic and social conditions might have a specific impact on welfare and inequality. Because of regional disparities, there is a significant variability in consumption levels and poverty across regions. In Tunisia, inequality is the highest in the Center-West and the North-West with a corresponding Gini coefficient of 0.36 (EBCNV, 2010). In Egypt, the variability in equality levels is even more pronounced with a Gini ranging from 0.35 in Cairo (the highest level) to 0.16 in Luxor (HIECS, 2010/2011). We hence observe a greater variability in inequality across regions in Egypt than in Tunisia.

Figure 1 and Figure 2 below show the population share as compared to expenditures share in Tunisia and Egypt. We observe that in Tunisia, apart from the South West which holds similar shares of both population and expenditures, the North East, North West and Center West are more populous but hold smaller expenditure shares; whereas the Grand Tunis, the Centre East and the South east are less populous but hold larger expenditure shares. In Egypt, the great majority of regions hold the same shares of both population and expenditure. One of the exceptions includes Cairo, which is less populated but holds a larger expenditure share, which is in contradiction with the observation that Cairo witnesses the highest inequality level in Egypt.

Inequality also varies between rural and urban areas. However, the trends are different between the two countries. While in Tunisia inequality is higher in rural areas (a Gini coefficient of 0.34 as compared to 0.33 in urban areas), it is the inverse in Egypt where the Gini coefficient is equivalent to 0.23 in rural areas and 0.30 in urban areas. In both countries, inequality by the residence area (rural/urban) and by region is mainly explained by within group inequality.

In both countries, unequal income distributions lead to high spatial disparities, even within cities. Welfare inequality is consequently also a geographic function. In Egypt, the North has been advantaged by the government in relation to the rural South (Abdel Meguid et al. 2011). In Tunisia, the coastal regions (North-East and Center-East) have had more attention than the interior regions of the country (North-West, Center-West and South), where the essence of the revolution took place. Jemmali and Amara (2014) in an attempt to assess the inequality in basic services distribution at the regional level in Tunisia using the Human Opportunity Index (HOI), notice important disparities in access to these services between the coastal and the interior regions.

Different levels of inequality are also observed along different levels of education. The inequality (Theil) decomposition by education groups reveals that in Egypt the aggregated within-group inequality amounts to 91.4 percent of overall inequality, which shows that there are great disparities in expenditure levels within each education group. Similar findings emerge

for Tunisia, where 92.6 percent of overall inequality differences are due to within-group disparities.

3. Methodology: the Welfare Generation Model

Tunisia and Egypt are today facing a period of deep political, economic and social transformation. Even though the political transition that both countries are going through since January 2011 is different, this period represents a real opportunity to opt for more targeted public policies to fight poverty and inequality, which appeared to be among the main driving forces of both revolutions. Social and economic outcomes may be different because of different income distributions (Bénabou, 2000, Ferreira, 2001). At the same time, different welfare distributions may lead to different labor choice trajectories and outcomes (Banarjee and Newman, 1993). The process of transition is indeed equivalent to structural change, which has an impact on the distribution of income.

In order to understand issues associated with inequality, it is important to understand the factors that affect the distribution of welfare in Tunisia and Egypt, accounted for by consumption expenditures. The WGM allows the understanding of the process that generates the distribution of consumption expenditures in both countries. A WGM classically requires the specification and estimation of a welfare generation function (income or expenditures) where the measure of welfare is regressed on a set of explanatory variables. In the present paper, we extend the WGM to other functions to account for the determinants of various individual and household characteristics.[1]

3.1 The process of generating the distribution of welfare

In order to explain the differences in the driving forces of welfare distribution in Tunisia and Egypt, we construct a simple parametric WGM at the household level, which allows us to separate the observed changes in the distribution of expenditures into three main key factors/sources. The first comprises the changes in the socio-demographic structure of the population, as characterized by area of residence, age, education, family background, and household composition. The second comes from changes in the returns to factors of production, including the various components of human capital, such as education and experience. The third has to do with changes in the occupational structure of the population, in terms of employment, unemployment, and inactivity. The regression-based method proposed allows us to quantify the contribution to welfare inequality of various factors, while taking into account the correlations among them. These factors are introduced as explanatory variables in the WGM, which is estimated through several regression models.

This paper consequently builds upon an existing literature by developing a recent methodology to understand the nature of the differences in the distribution of household welfare in two countries that recently witnessed a revolution, mainly attributed to a perceived high level of inequality. We use welfare rather than income as we use expenditures distributions for the analysis.

Heterogeneity across individuals and countries are accounted for by two datasets: 1) Egypt - Household Income, Expenditure, and Consumption Survey, 2010/2011(HIECS, 2010/2011) and (2) Tunisia - National Survey on Household Budget, Consumption and Standard of Living, 2010 (EBCNV, 2010). Both datasets have been harmonized by the Economic Research Forum (ERF) to allow for more systematic comparative research. These household budget and consumption surveys provide information about households' characteristics: households' composition and size, socioeconomic characteristics of the household head, ownership of

[1] In a coming paper, the parameters' estimates from the WGM are used as an input in the decomposition analysis of welfare inequality in Tunisia and Egypt.

durables, livestock and land, region and area of residence, education status, occupation and labor status…) and consumption of goods and services.

In the following section, we introduce the concept of a WGM, with a detailed description of the system of equations used for our estimations.

The process of generating the distribution of welfare can be explained by the fact that the welfare derived from consumption expenditures depends on the price paid and the amount of income available. Household data for Tunisia does not contain information about incomes and earnings. Hence, for our decomposition analysis, welfare levels are measured by consumption expenditures, rather than by income data. While this limitation might be seen as a shortcoming, it is worth noting that while in OECD countries, the tax-benefit system substantially alters the distribution of income, in developing countries, market income may approximate to household welfare which is approximated by consumption-based measures of living standards. Consumption expenditures are consequently considered as being reliable for our analysis as they allow tackling households' welfare, and are disaggregated enough to allow for a deep analysis of the distribution of welfare.

Assuming that welfare is directly a function of consumption expenditures:

$$W = \frac{C}{P} \tag{1}$$

C holds for the level of total consumption expenditures,

Consumption expenditures depend on market income, benefits and taxation, which in turn depend upon personal skills, family characteristics, Z and tax-benefit parameters θ

$$C = Y_M(Z) - T - (Z,\theta) + B(Z,\theta) \tag{2}$$

Market income is a function of the receipt of income source i $I_{M,i}$ and the amount $Y_{M,j}$ each are a function of observable personal characteristics *Z*, unobservable characteristics ε parameters θ and decomposition unit *t* such as time period, or country.

$$Y_M = \sum Y_{M,j}(Z,\theta_t,\varepsilon_t) \times I_{M,j}(z,\theta_t,\varepsilon_t) \tag{3}$$

Equation 3 shows clearly that in order to understand the factors that influence the distribution of expenditures, and to design more targeted policies, we need to understand how the different influences on the components that affect expenditure combine to generate the distribution of expenditure. In our case, we are interested in explaining differences across countries, for this we need to understand the underlying welfare generation process.

Household income is defined as the sum of income from employment, self-employment, capital and other market source as follows:

$$Y_M = Y_{Emp} I_{Emp} + Y_{SE} I_{SE} + Y_{Cap} I_{Cap} + Y_{Other} I_{Other} \tag{4}$$

Where Y_i is income source I and I_i the presence of this income. Both can be expressed as follows:

$$\begin{aligned} Y_i &= f_i(Z,\theta,\varepsilon_{i,t}) \\ I_i &= g_i(Z,\theta_t,\varepsilon_{i,t}) \end{aligned} \tag{5}$$

Where Z is a set of personal characteristics, θ_t the parameters associated with the relevant model and *t* the unit over which inequality is being compared, in our case, the country of analysis.

The method developed in this paper is the welfare generation model presented above as welfare is tackled by consumption expenditures. The distribution of household expenditures depends not only on the returns and characteristics of its employed members, but also upon other income sources.

The WGM requires a system of equations capturing labor choices, types of consumption expenditures associated with these occupational choices as well as the presence of market income sources. The WGM has the same specification in each country.

The generation of statistical distributions which approximate the true conditional and joint distributions can be done parametrically or semi-parametrically or by combining both techniques (Juhn at al. 1993, Di Nardo et al., 1996, Bourguignon et al. 2007, Ferreira, 2012). As we use a high number of variables in our WGM, we follow the parametric approach developed in Bourguignon, et al. (2007) and O'Donoghue (2002). The parametric approach is more convenient for our purposes because it allows the approximation of the true conditional distributions using standard econometric models, where the parameters estimates have a direct economic interpretation.

The structure of the WGM for each country has the following structure:

a) A consumption model.
b) A labor market model, including models to estimate the statistical distribution of labor market factors:
    i. In work/ out of work model = f(Demography)
    ii. Employment status (employee, working in the public sector, farmer) = f(Demography)
    iii. Sector of occupation= f(Demography)
    iv. Occupation = f(Demography, Sector)
    v. Industry = f(Demography, Sector, Occupation)
    vi. Out of work (unemployed, retired) = f(Demography)

The labor market module is a system of equations capturing: labor market status choices (in work/out of work), employment choices, occupational and industry choices, and out of work statuses (unemployed, retired). Besides, in order to take into account gender issues, which are particularly relevant for our case studies, the labor market model is estimated separately for men and women.

c) Demography: assumed exogenous (age, gender, marital status education, number of children, region, area of residence – rural/urban, family background).

The area of residence: Rural/urban and region are particularly relevant for our analysis given the differences in access to the labor market according to the location. Location, educational status and labor characteristics are identified as important factors affecting the level of welfare and its distribution among the population. On the other hand, a strand of the empirical literature has identified that inequality of opportunity contributes to total welfare inequality (Belhaj-Hassine, 2010). In this respect, circumstances and opportunities faced by individuals, such as family background characteristics (such as the education of parents), gender or place of birth can determine a fraction of total welfare inequality. Belhaj-Hassine (2010) finds that in Egypt, unequal access to opportunities accounts for 30 percent of total earnings inequality. In the same strand of the literature, Jemmali and Amara (2014) show how variables such as the residence area, the education level of the household head and the per capita household expenditure are strong explanatory factors in determining regional disparities.

Different explanatory factors can explain the total level of inequality in the distribution of welfare, such as income or consumption expenditures. In Roemer's (1998) theory, these can be divided into two main factors: the so-called efforts and circumstances. The first fall under a certain measure of individuals' control, such as the duration of studies. The second, are, on the contrary, out of individuals' control, such as residence, gender, place of birth or family background. This differentiation is at the heart of the empirical literature about inequality of opportunity, where equality is reached when the main outcomes, or advantages, are distributed independently of circumstances.

The model typically involves three types of models:

- Binary model for binary choices;
- Multivariate choice model;
- and
- Mincer-type regression model for the level of consumption expenditures.

In each case the method involves estimating regression model parameters β and a measure of the error ε. These will presented below.

3.2 Estimating parameters and residuals for logit equations:

Models of binary events, such as in-work, are using a logit model due to the computational ease of undertaking these simulations. In order to use the estimated probabilities from logistic models within a Monte Carlo simulation, we draw a set of random numbers such that we predict the actual dependent variable in the raw data.

We define our logit model as follows:

$$y_i^* = \text{logit}(p_i) = \ln\frac{P_i}{(1-P_i)} = B_o + \sum_k \beta X_i^k + \varepsilon_i \tag{6}$$

Such that

$$y = 1 \text{ if } y_i^* > 0 \tag{7}$$

In order to create the stochastic term, ε_i, we use the following relationship:

$$\varepsilon_i = \ln\left(\frac{u_i}{1-u_i}\right) \tag{8}$$

Such that

$$y = 1 \text{ if } u_i < \text{logit}^{-1}\left(B_o + \sum_k \beta X_i^k\right) = p_i \tag{9}$$

A value of u_i that satisfies this is:

$$u_i = (Y=1)*(r*p_i) + (Y=0)*(p_i + (r*(1-p_i))) \tag{10}$$

where *r* is a uniform random number.

3.3 Estimating parameters and residuals for Multinomial logit equations

Once we have established whether an individual is in-work or not, his work status, employee, farmer, etc, multi-category choices such as occupation/industry are simulated using a reduced form multinomial logit model. In Bourguignon et al. (2008), the choices of inactivity, formal employment in industry, informal employment in industry, formal employment in services or

informal employment in services are modeled using a multinomial logit model. Multinomial models may be used when the explanatory variables are not choice specific[2]:

$$P(Y=s)=\frac{e^{ZB_s}}{e^{ZB_s}+\sum_{j\neq s}e^{ZB_j}} \quad (11)$$

where $P(Y=s)$ is the probability of selecting choice *s*, and *Z* are the set of personal characteristics.

Disturbance terms for multi-category dependent variables, such as occupation or industry are derived from multinomial logit models using the following method. We firstly generate a set of random variables for counter-factual choices using the extreme value distribution:

$$v_j = -\ln(-\ln(u)). \quad (12)$$

u is a uniform random number and *j* is choice j not the actual choice chosen by the individual in the original data. Our objective now is to choose a random variable from the extreme value distribution, v_i for the actual choice *i* such that:

$$xb + v_i > xb + v_j \forall j \neq i \quad (13)$$

3.4 Estimating parameters and residuals for expenditures regressions equations

Once we have established the labor force characteristics of each individual, the consumption expenditures variables may be modeled using an ordinary least squares:

$$Y_i = \exp(X^* B + \varepsilon) \quad (14)$$

Where

$$\varepsilon \sim N(0, \sigma^2_{\varepsilon,t}) \quad (15)$$

Typically the dependent variable is logged as most expenditures distributions are log normal.

For each model, we require values of the disturbance terms for all individuals. We only recover ε in an equation for those that we observe to be in employment. However, it may happen that someone is simulated to be in employment in another period and this thus requires employee income to be simulated. In this case we need a value for ε. For these cases, we generate stochastically a value using a random draw from the distribution above. The same is true for the discrete choice both binary and otherwise described above. As a result there should be no missing values in the simulation.

In this section, we have focused on models with an individual unit of analysis. However, the behavior of individuals within a household, particularly between partners, is unlikely to be independent. One mechanism for incorporating this issue is to estimate the models jointly, where the error terms of spouses are correlated with each other. However, this can be difficult computationally. As a result, many models in this literature take the simultaneity between household member labor supply decisions by estimating and simulating models sequentially. In addition, sometimes, different models are estimated depending on the position of a person in a family.

[2] There is a large literature on using choice specific models for modelling multi-category choices as in the case of structural labor supply equations (See, Van Soest, 1995; Callan et al., 2009). However, we use a calibration mechanism described below which dominates the behavioural operation of these models.

Results from the WGM described help to shed light on the determinants of several individual and household characteristics in both countries. The estimated coefficients for the WGM logit and multinomial logit regression models for individual and household characteristics are reported in the Appendix.

4. Returns to the Labor Market Characteristics in Tunisia and Egypt

In this paper, we purposefully take as case studies Tunisia and Egypt in order to perform a cross-country analysis. As a result of the "Arab spring" that started in January 2011, Tunisia and Egypt witnessed revolutions that led to the collapse of the two long-established dictatorships of Zine el Abidin Ben Ali and Hosni Mubarak respectively. The causes are certainly a mix of several factors (Syed, 2014) and variable from one country to the other, still, poverty and perceived persistent inequality are recognized as key driving factors (Abdel Meguid et al. 2011, Tinoco, 2013, Ncube and Anyanwu, 2012)[3]. Besides the need for more opportunities to work, less regional disparities and less corruption and more democracy, Tunisian and Egyptian protestors have been chanting their desire for more equality.

This is, however, quite a paradox as we observe a mismatch between factual and perceived inequality, especially in Egypt (El Enbaby and Galal, 2015). While inequality in Tunisia, as measured by household surveys, was high but stable in the pre-revolution period, in Egypt, inequality is rather low and has been declining during that same period[4]. According to the World Bank database (World Bank, 2013, World DataBank), the Gini coefficient in Egypt has declined from 32.8 in 2000 to 30.8 in 2008. Even if inequality is higher in Tunisia, it has also been declining from 40.8 in 2000 to 35.8 in 2010[5]. In Egypt, living standards, are, however, considered rather low by international standards (Abdel Meguid et al. 2011) and have not improved during the last two decades. Poverty is notably high, accounting for 20 to 30 percent of the population who live below the poverty line. On the contrary, poverty has decreased in Tunisia. The head count poverty rate declined from 32.4 percent in 2000, to 23.3 percent in 2005 and 15.5 percent in 2010[6]. Even though Tunisia was considered as a good practice development model[7], notably by international organizations such as the World Bank, key economic and social development challenges have not been addressed in the country (AfDB, 2011). Indeed, the aggregated promising economic indicators may have hidden strong regional variations, notably in terms of poverty and employment opportunities. According to the National Institute of Statistics (INS)[8], in 2010, the poverty rate was varying from a high level of 32.3 percent in the Center-West to 25.7 percent in the North-West, 21.5 percent in the South-West, 8 percent in the Middle-East, 10.3 percent in the North-East and finally 9.1 per cent in the Great-Tunis. The national poverty rate was around 15 percent.

[3]As shown in Jamal and Tessler (2008), the request for democracy in the Arab World is more related to social and economic concerns rather than political freedom and civil rights. Note, however, that the sample countries do not include Tunisia and Egypt.

[4] According to Hlasny and Verme (2014), the low level of inequality in Egypt might be explained by a poor measurement of top incomes in the household surveys. The authors estimate this underestimation to around 1.3 percentage points in the Gini Coefficient.

[5]Using the Gini Index, Zouari-Bouattour and Jallouli (2001) show that inequality of expenses in Tunisia decreased between the two periods 1975-1980 and 1985-1990, notably because of the decrease in food expenses inequality. Bibi and Nabli (2008) and Ayedi and El Lahga (2005) show a rise of polarization measures in Tunisia in the 1980's, which coincides with the bread riots. Kheir-El-Din and El-Laithy (2006) showed that the real per capita expenditure in Egypt has been declining over the period 1991-2004.

[6]See Sboui, 2012 for a detailed description of the evolution of poverty in Tunisia during the period 1985-2005).

[7] See Cavatorta and Haugbolle, 2012 for a description of the so-called « Tunisian economic miracle » that the authors consider as one of three Tunisian myths.

[8] Mesure de la pauvreté et des inégalités en Tunisie 2000-2010

Still, the two countries may display very diverse characteristics, notably in terms of access to the labor market and employment choices. While Tunisia is a small country of only 163,610 km^2 and almost 11 million inhabitants, Egypt represents a surface of 1,002,450 km^2 and accounts for almost 88 million inhabitants. In the period 2010-2014, GDP per capita was equivalent to US $3,314.5, and it is evaluated to equal US $4,316.7 in Tunisia during the same period[9].Geography, natural resource endowments, economic structures, human capital and skills, social structures and labor market characteristics, economic policies and institutions are also different, which may differently affect poverty and inequality.

Both labor markets are characterized by high levels of youth unemployment and informalization, the latter being substantial in the Egyptian market, essentially for the first job (Amer, 2014). In Tunisia, while the total unemployment rate has been overall stable over the period 1984-2010, the university graduate unemployment rate has been sharply increasing, starting from less than 5% in 1984 to more than 20% in 2010 (INS, 2010).

In order to shed light on differences in the determinants of employment behaviors, the WGM estimated in this paper gives a more detailed idea about the contribution of several individual characteristics to employment choices in Tunisia and Egypt. Table 5 in the Appendix gives the logit estimation results for being in work[10] in both countries. The model is run separately for men, single women and women in a couple. As for the impact of the level of education on the probability of being in work, while holding a university degree increases the probability of the Egyptian men to be in work (the associated parameter is positive and significant at the one percent significance level), it is not the case in Tunisia (the associated parameter is not significant). Besides, differences are observed between men and women. Holding a university degree increases the probability for being in work for women (single or married) more than for men, essentially for the Tunisian women in couple (with an associated parameter of 2.0622). The illiteracy rate[11] has a different impact in Tunisia and Egypt. In Tunisia, It decreases the probability of being in work for all men and women, whereas in Egypt, it is only the case for women living in a couple. Differences among men and women are also observed in relation to the household composition. Additional children in the household increase the probability of being in work for men, while it is the contrary for women. Concerning age, the older the individuals are, the more likely they will be in work. This result holds for both countries, equally for men and women. Background characteristics related to the area of residence represent the most important differences across Tunisia and Egypt. In Tunisia, the region of residence (as captured by the regional employment rate) has a significant impact on being in work with an associated parameter of 1.7317 for men, 4.9369 for single women and 6.3576 for women in couple. The regional employment rate has the most significant impact on individuals being in work. The coefficients are the largest and positive for all individuals in the sample. On the contrary, the regional employment rate is not an important determinant of the status of employment in Egypt, it only has a positive impact for women in couple. Living in an urban area decreases the probability of being in work for men in Tunisia but has a non-significant impact in Egypt.

Tables 6, 7, 8 and 9 give the logit estimates for the different dependent variables related to the employment status of individuals in the sample. These are: employee, unemployed, working in the public sector, and farmer. All models are estimated twice, once for men and once for women. As for the probability of being an employee, the most important differences between

[9] World Bank Data, http://data.worldbank.org/indicator/NY.GDP.PCAP.CD.

[10] In work individuals include: employees, employers, self-employed and not classified belonging to the age group 16-80 years old.

[11] According to the HIECS, 2010/2011 and EBCNV, 2010, the illiteracy rate is slightly higher in Egypt accounting for 25.14% of the sample population as compared to a rate of 21.07 % in Tunisia.

countries are observed along the level of education and the place of residence. As shown in Table 7, one striking result concerns the probability of being unemployed. The associated parameters to the explanatory variable "university degree" are positive and significant for all estimations, suggesting that individuals holding a university degree are more likely to be unemployed. Related parameters are the largest for women: 2.6530 and 3.2500 for Egyptian and Tunisian women respectively, as compared with 1.6365 and 0.8418 for Egyptian and Tunisian men respectively. This result might be justified by the high level of graduate unemployment rates that both countries are witnessing. Holding an upper secondary degree has an inverse impact on the probability of being unemployed in Tunisia and Egypt. While the associated parameters are positive and significant for both Egyptian men and women, they are negative and significant for Tunisian men and women. Gender differences are observed in line with the marital status. Indeed, being married only decreases the probability of being unemployed for women. Other cross-country differences are observed in relation to the impact of the illiteracy rate and the location (rural/urban). In relation to the probability of working in the public sector, as shown in Table 8, the trends are generally similar in both countries.

In order to shed light in the drivers of labor market behaviors in Tunisia and Egypt, the WGM includes multinomial logit models of occupational choices and industry classification of the main job, which are examined using conditional probabilities (Table 10 and Table 11). The distribution of individuals among the different occupations is given in Table 2 below:

Multinomial logit results for occupational choices in Table 10 indicate the probability for a person to work in a certain occupation, relative to the probability of being legislator, senior official and manager (which the reference option). As expected, in both countries the level of education was found to be a determining factor in choosing to participate in a given occupation. We observe that the coefficients related to the university degree are large in comparison to most other explanatory variables. Apart from one exception (professionals for Tunisia and Egypt), individuals holding a university degree are less likely to work in any occupation as compared to being a legislator, senior official and manager. Significant differences in the odds of choosing a given occupation is also observed according the regional employment rates. Related coefficients are larger than for any other variable. Small differences are however observed between the two countries.

As for the industrial classification for the main jobs, descriptive statistics for the two countries are given in Table 3.

Multinomial logit estimates for industrial choices in Table 11 assess the probability of an individual working in a certain sector as related to working in the agriculture and fishing sector (the base outcome). As for the occupation choices, the level of education in both Tunisia and Egypt is a determining factor in the industrial classification of individuals' jobs. It is even more pronounced for the financial sector, where related coefficients are large and positive (2.9884 and 2.9364 for Egypt and Tunisia, respectively), indicating that those holding a university degree are more likely to work in the financial sector. The regional employment rate also plays a crucial role in the choice of the industrial sector. Associated parameters are the largest in the regression. Finally, the place of residence (urban/rural) is also an important determinant in the probability for working in a given sector[12].

Chow test statistics have been computed for all models (logit and multinomial) included in the WGM to examine whether the two countries share the same intercept and slope of the

[12]Logit models have also been estimated for household characteristics in relation to dwelling, namely, being homeowner, having a house and the dwelling is provided for free. Results are given in Table 13 in the Appendix.

explanatory variables. The general finding confirm that the parameters are significantly different between Tunisia and Egypt[13].

5. Comparing Inequality and the Distribution of Welfare in Egypt and Tunisia

In order to understand how different individual and household characteristics explain the distribution of welfare in both countries, the model presented in Table 4 below shows the log of household total consumption expenditures in both Tunisia and Egypt, as a function of demographics, human capital, work status, location and region (as captured by the regional employment rates) and household composition.

As expected, significant consumption expenditures gaps are due to education. The more educated (holding a university degree) enjoy higher levels of household total expenditures. This result is also true for those holding an upper secondary level, but only in Tunisia. On the contrary, those who are illiterate enjoy lower levels of consumption expenditures; however, this result is only significant at the one percent significance level in Tunisia. The employment status also has a different impact on the level of household characteristics. While being in work increases the level of welfare in Tunisia, it plays the inverse role in Egypt. Both results are significant at the one percent significance level.

Household characteristics are also significant and play an equal role in both countries. In line with theoretical expectations, being married, the highest the number of children over four years old, the highest the number of adults and the highest the number of elderly living in the household, the highest the level of household expenditures.

As compared to the occupation: legislators, senior officials and managers, the other occupations imply a lower level of household expenditures. This is true for both Tunisia and Egypt. Concerning the industrial classification of the main job, almost all industrial classifications, apart from Construction, Commerce and Transportation, Storage and Communication, imply a higher level of consumption as compared to the base outcome, which is agriculture and fishing. The location and region of the household are also significant. Nevertheless, we observe a difference between countries in relation to the regional employment rate. While in Egypt, a higher regional employment rate doesn't imply a higher level of household expenditures (the associated parameter is not significant), the contrary is observed in Tunisia, where a higher regional employment rate entails a lower level of household expenditures. The latter seems to be more related to the "female regional employment rate," the associated parameters of which are positive and significant in both countries.

As for the other models in the WGM, the Chow test results confirm that the parameters of the explanatory variables in the household expenditures regression are significantly different between both countries. The large F and Prob>F = 0.0000 for all variables in the model rejects the null hypothesis of equal slope and intercept.

6. Conclusion

This paper presented the WGM for Egypt and Tunisia used to generate parameters' estimates for individual and household choices. The WGM allows us to measure the relative contribution of both individual and household factors, first, into various labor and employment choices, and second, to the distribution of consumption expenditures. While results are generally similar between the two countries, where estimation results are close, we observe some important differences in regards to the contribution of several variables.

For instance, regressions related to the probability of being in work show very important differences across countries. The level of education, the illiteracy rate and the regional employment rate influence the probability of being in work differently in Tunisia and Egypt.

[13]Results can be provided by authors upon request.

As for the level of expenditures, the impact of education is more pronounced in Tunisia than in Egypt. Regional disparities also play a different role in both countries. However, an interesting result concerns the observation that a higher female regional employment rate implies a higher level of household expenditures, both in Tunisia and in Egypt.

The next step in our research is to undertake an inequality decomposition analysis based on swapping the parameters' estimates from the WGM presented in the present paper in order to simulate counterfactual expenditures distributions in Tunisia and Egypt[14]. The cross-national differences in welfare inequality, captured by the levels of consumptions, will be decomposed into differences due to labor market factors and demographics, using a sequence of counterfactual distributions of household consumptions that would prevail in each country, if each of these factors were swapped in turn between countries, first keeping the others unchanged, and second by sequentially replacing each factor. The decomposition analysis will be done through the generation of counterfactual means and inequality measures for the household consumption distributions. This analysis will allow us to compare actual welfare distributions with counterfactual distributions in which parameters (capturing returns to various characteristics) are imported from one country to the other. Swapping parameters between countries allows us to quantify the impact of the different determinants of inequality. We use a decomposition approach based on Oaxaca-Blinder method in order to understand the drivers of inequality across the two countries.

From a policy making point of view, the decomposition approach, as compared to the tradition decomposition methods (by income sources and by subgroups), is very useful for policy makers as it can inform about what measures to implement to address inequality problems.

[14]Results from computing the Chow test for all models in the WGM confirm the relevance of the decomposition analysis based on swapping parameters between Tunisia and Egypt..

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Figure 1: Population and Expenditures Share by Region in Tunisia

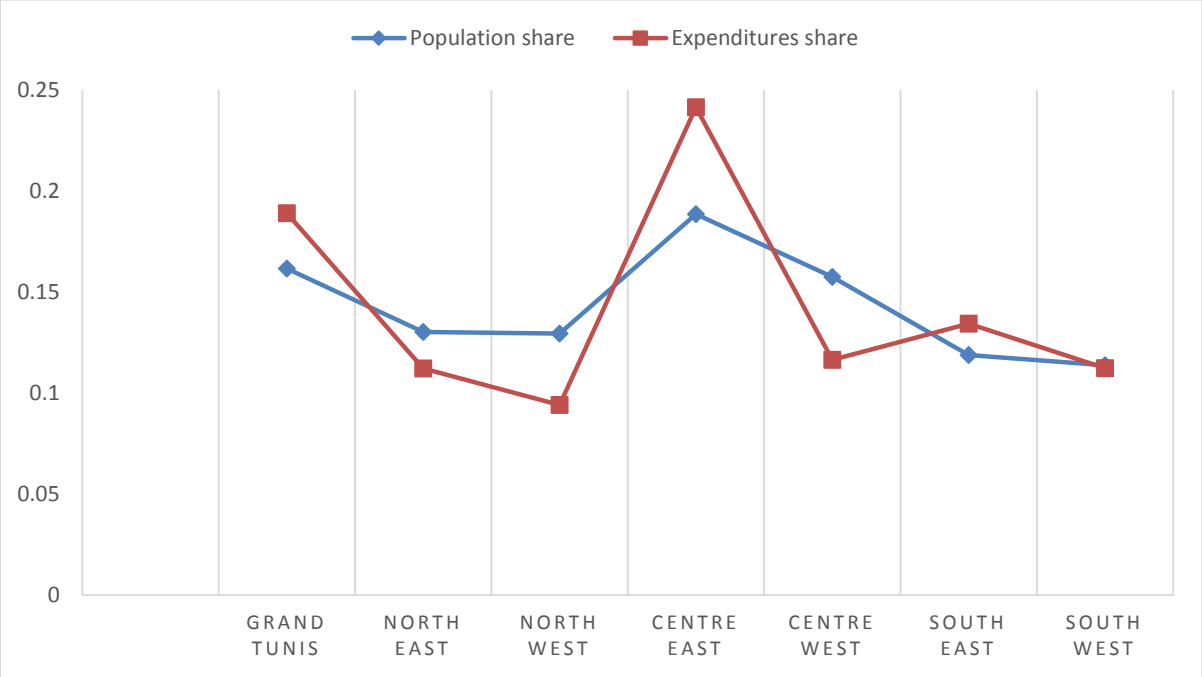

Figure 2: Population and Expenditures Share by Region in Egypt

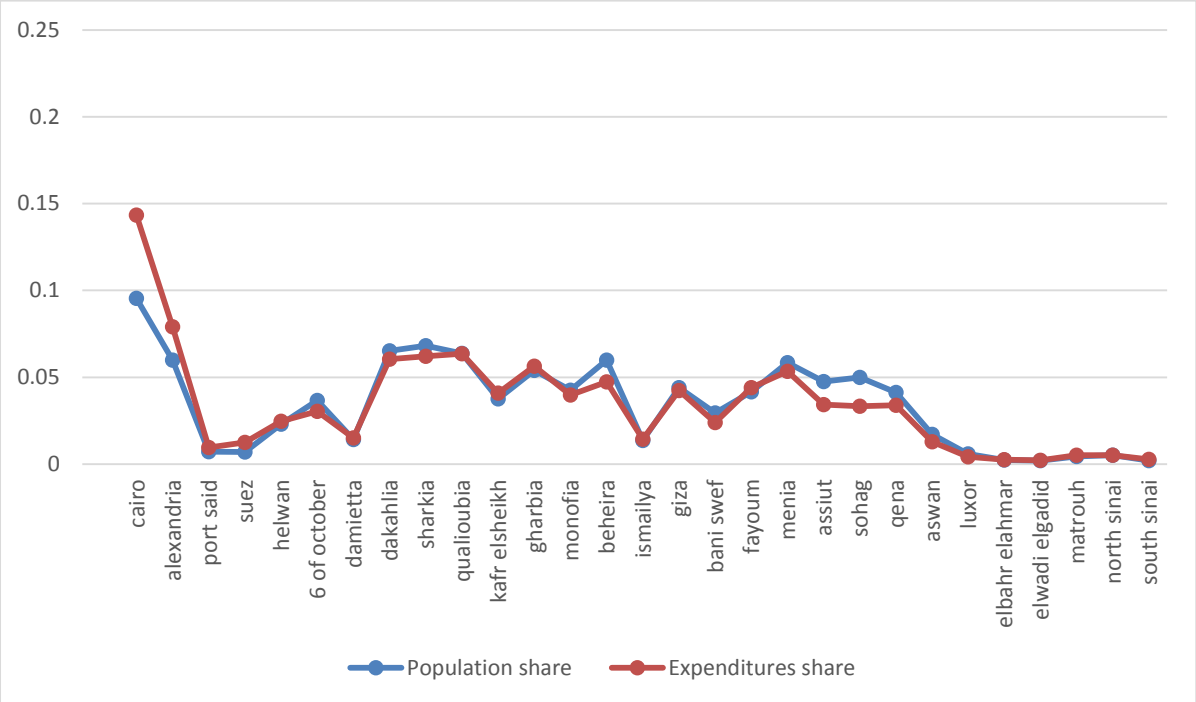

Table 1: Summary measures of inequality in Tunisia and Egypt

Inequality indices	GE(-1)	GE(0)	GE(1)	GE(2)	Gini
Egypt	0.14	0.13	0.16	0.25	0.28
Tunisia	0.27	0.22	0.23	0.32	0.36

Source: Authors' calculations based on HIECS, 2010/2011 EBCNV, 2010.

Table 2: Occupation Classification for the Main Job (percent)

	Tunisia	Egypt
Legislators, senior officials and managers	7.31	7.04
Professionals	4.94	12.33
Technicians and associate professionals	7.01	9.00
Clerks	4.28	2.49
Service workers and shop and market sales	9.08	10.51
Skilled agricultural and fishery workers	13.78	27.45
Craft and related trades workers	13.29	15.22
Plant and machine operators, and assemblers	9.98	8.77
Elementary occupations	25.83	7.20
Other/unspecified	0.30	
Not stated	4.21	
Total	100	100

Table 3: Industry Classification for the Main Job (percent)

	Tunisia	Egypt
Agriculture and Fishing	19.55	27.83
Mining	1.14	0.21
Manufacturing	14.83	11.22
Electricity and Utilities	0.98	1.37
Construction	0.24	10.67
Commerce	17.70	12.66
Transportation, Storage and Communication	17.27	9.63
Financial, Insurance and Real Estate	1.27	0.69
Other services (including public administration)	21.75	25.71
Unspecified	0.64	
Not stated	4.63	
Total	100	100

Table 4: Total Household Expenditures Model Estimation

Dependent variable: log of total household expenditures				
	Egypt		Tunisia	
	Coefficient	P>t	Coefficient	P>t
Explanatory variables[15]				
University degree	0.2566	0.000***	0.4288	0.000***
Upper secondary degree	0.0231	0.058	0.1219	0.000***
Illiterate	-0.1103	0.780	-0.2086	0.000***
Married	0.0840	0.000***	0.2150	0.000***
In work	-0.0044	0.000***	0.1718	0.000***
employed	-0.0421	0.000***	-0.0716	0.000**
Number of rooms in the house	0.0841	0.000***	(omitted)	
Occupation classification of the main job				
professionals	-0.0796	0.001***	0.0798	0.056
technicians and associate professionals	-0.0873	0.000***	0.1487	0.000***
clerks	-0.1303	0.000***	0.0126	0.739
service workers and shop and market sales	-0.2022	0.000***	-0.1060	0.000***
skilled agricultural and fishery worker	-0.1611	0.000***	-0.2421	0.000***
craft and related trades workers	-0.2603	0.000***	-0.2803	0.000***
plant and machine operators, and assemblers	-0.2137	0.000***	-0.1279	0.000***
elementary occupations	-0.2518	0.000***	-0.3649	0.000***
Industry classification of the main job				
Mining	0.2279	0.017**	0.1642	0.001***
Manufacturing	0.1275	0.003***	0.1665	0.000***
Electricity and Utilities	0.1372	0.006***	0.1286	0.037**
Construction	0.0796	0.075	0.1899	0.053
Commerce	0.0747	0.083	0.0451	0.11
Transportation, Storage and Communication	0.1070	0.013**	0.0812	0.006***
Financial, Insurance and Real Estate	0.2583	0.000***	0.2604	0.000***
Other services (including public administration)	0.0284	0.493	0.1071	0.000***
Regional employment rate	0.1220	0.303	-2.1499	0.000***
Female regional employment rate	0.8654	0.000***	1.0066	0.000***
Place of residence: Urban	0.1986	0.000***	0.2087	0.000***
Number of in work individuals	0.0030	0.684	0.0872	0.000***
Number of children less than 3 years old	-0.0076	0.289	0.0177	0.088
Number of children between 4 and 11 years old	0.0500	0.000***	0.0264	0.000***
Number of children between 12 and 15 years old	0.0731	0.000***	0.0608	0.000***
Number of adults in the household	0.1102	0.000***	0.1030	0.000***
Number of people over 65 years old in the household	0.0762	0.000***	0.0723	0.000***
Constant	8.8587	0.000***	9.5054	0.000***
Number of obs =	6033		7361	
F(32, 5710)=	158.78		173.68	
Prob> F=	0.000		0.000	
R-squared=	0.4662		0.4235	
Adj R-squared=	0.4633		0.4211	
Root MSE=	0.34606		0.48862	
***Significant at the 1% level				
**Significant at the 5% level				

[15]The unit of analysis for the explanatory variables is the head of household.

Appendix

Table 5: The Logit Estimated Coefficients for Labor Market Participation: Tunisia and Egypt, Men, Single Women and Women in Couple

	Egypt		Tunisia		Egypt		Tunisia		Egypt		Tunisia	
Dependent variable: In work	**Male**				**Female single**				**Female in a couple**			
	Coefficient	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**
Explanatory variables												
Universitydegree	0.0912	0.000***	0.0286	0.750	1.5730	0.000***	0.4121	0.000***	1.9409	0.000***	2.0622	0.000***
Uppersecondarydegree	0.0553	0.000***	-0.1695	0.002***	0.5647	0.000***	-0.2140	0.006**	0.7266	0.000***	1.0330	0.000***
Number of children less than 3 years old	0.3981	0.006***	0.4456	0.000***	-0.2162	0.006***	-0.2984	0.000***	-0.1236	0.082	-0.1146	0.061
Number of children between 4 and 11 years old	0.0721	0.048	0.1932	0.000***	-0.1051	0.048**	-0.1214	0.004***	-0.0871	0.036**	0.0091	0.790
Number of children between 12 and 15 years old	-0.0428	0.826	0.0891	0.010**	0.0155	0.826	-0.1343	0.013**	0.0577	0.322	-0.0758	0.124
age	0.5445	0.000***	0.4187	0.000***	0.2601	0.000***	0.2472	0.000***	0.2723	0.000***	0.2214	0.000***
age2	-0.0064	0.000***	-0.0047	0.000***	-0.0031	0.000***	-0.0030	0.000***	-0.0029	0.000***	-0.0026	0.000***
Regionalemployment rate	3.4532	0.887	1.7317	0.003***	0.1504	0.887	4.9369	0.000***	4.2807	0.000***	6.3576	0.000***
Place of residence:Urban	-0.4955	0.633	-0.4219	0.000***	0.0465	0.633	0.3175	0.000***	-0.1920	0.023**	0.1027	0.135
Illiterate	0.8772	0.191	-0.2042	0.003***	0.1809	0.191	-0.2564	0.002***	-0.3900	0.001***	-0.2070	0.006***
Spouse in work									0.1446	0.273	0.5092	0.000***
constant	-11.4075	0.000***	-8.5555	0.000***	-6.7135	0.000***	-9.3561	0.000	-11.6720	0.000***	-11.2473	0.000***
Number of obs =		11020		17454		4970		9884		6147		9195
LR chi2(10) =		4073.84		6300.68		528.18		901.25		638.37		949.92
Prob> chi2 =		0.000		0.000		0.000		0.000		0.000		0.000
Pseudo R2 =		0.3287		0.268		0.128		0.0918		0.1155		0.1085
	Log likelihood = -4160.0146		Log likelihood = -8564.2222		Log likelihood = -1799.114		Log likelihood = -4456.5669		Log likelihood = -2443.1587		Log likelihood = -3904.5162	

Notes: ***Significant at the 1% level

Table 6: The Logit Estimated Coefficients for "Employee": Egypt and Tunisia, Male and Female

	Egypt		Tunisia		Egypt		Tunisia	
	Male				Female			
Dependent variable: employee	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**
Explanatory variables								
Universitydegree	0.7916	0.000***	0.8722	0.000***	2.7904	0.000***	1.1386	0.000***
Uppersecondarydegree	0.3044	0.000***	0.0321	0.632	0.7814	0.000***	-0.0888	0.48
Number of children less than 3 years old	-0.1439	0.000***	-0.1024	0.010**	-0.5575	0.000***	-0.0613	0.507
Number of children between 4 and 11 years old	-0.1146	0.000***	-0.0436	0.095	-0.2045	0.008***	-0.1407	0.008***
Number of children between 12 and 15 years old	0.0264	0.491	0.0381	0.297	-0.1469	0.148	-0.0190	0.801
age	0.0790	0.000***	0.1049	0.000***	0.0658	0.057	-0.0778	0.000***
age2	-0.0013	0.000***	-0.0015	0.000***	-0.0010	0.024**	0.0003	0.198
Regionalemployment rate	-5.9739	0.000***	-3.4177	0.000***	-7.6802	0.000***	2.5092	0.051
Place of residence:Urban	0.0945	0.089	0.4309	0.000***	1.3310	0.000***	1.4418	0.000***
Illiterate	-0.3834	0.000***	0.0505	0.514	-1.4654	0.000***	-0.4677	0.000***
constant	5.2468	0.000***	1.6332	0.002	6.4047	0.000***	0.8442	0.437
Number of obs	8265		10550		1744		3634	
LR chi2(10)	932.95		822.16		841.4		734.15	
Prob> chi2	0.0000		0.000		0.0000		0.0000	
Pseudo R2	0.0894		0.0615		0.3859		0.1758	
	Log likelihood = -4751.7397		Log likelihood = -6273.4693		Log likelihood = -669.46171		Log likelihood = -1720.7909	

Notes: ***Significant at the 1% level

Table 7: Logit Estimated Parameters for “unemployed”: Egypt and Tunisia, Male and Female

	Egypt		Tunisia		Egypt		Tunisia	
	Male				Female			
Dependent variable: unemployed	Coefficient	P>z	Coefficient	P>z	Coefficient	P>z	Coefficient	P>z
Explanatory variables								
Universitydegree	1.7898	0.000***	0.9475	0.006***	3.1172	0.000***	3.2203	0.000***
Uppersecondarydegree	0.4441	0.024**	-0.9683	0.000***	1.5301	0.000***	-0.4190	0.000***
married	-0.1650	0.637	-0.2305	0.402	-2.1840	0.000***	-2.1536	0.000***
Number of children less that 3 years old	-0.4436	0.063	-0.0101	0.932	-0.2916	0.108	-0.2019	0.024**
Number of children between 4 and 11 years old	0.1288	0.286	0.0698	0.235	-0.2797	0.015**	-0.2676	0.000***
Number of children between 12 and 15 years old	-0.2860	0.046	-0.1815	0.005***	0.1293	0.297	-0.1419	0.042**
age	0.5887	0.000***	0.6435	0.000***	0.1761	0.002**	0.5727	0.000***
age2	-0.0074	0.000***	-0.0076	0.000***	-0.0032	0.008***	-0.0092	0.000***
regionalemployment rate	-3.0815	0.109	-1.5675	0.172	-0.3457	0.860	1.7544	0.108
Place of residence:Urban	0.6757	0.000***	-0.8467	0.000***	-0.1765	0.286	0.1810	0.021**
Illiterate	0.7232	0.015**	-0.7957	0.017**	-0.3370	0.437	-0.6330	0.000***
constant	-9.0595	0.000***	-8.3901	0.000***	-5.3351	0.001***	-10.7985	0.000***
Number of obs	2038.00		4401.00		8310.00		13970.00	
LR chi2(9)	461.06		1705.66		658.62		2948.96	
Prob> chi2	0.00		0.00		0.00		0.00	
Pseudo R2	0.29		0.28		0.32		0.35	
	Log likelihood = -573.97252		Log likelihood = -2193.5648		Log likelihood = -711.81892		Log likelihood =	-2792.7884

Notes: ***Significant at the 1% level

Table 8: Logit Estimated Parameters for "Working in The Public Sector": Egypt and Tunisia, Male and Female

	Egypt		Tunisia		Egypt		Tunisia	
	Male				female			
Dependent variable: Working in the public sector	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**
Explanatory variables								
Universitydegree	1.2867	0.000***	2.0816	0.000***	1.5121	0.000***	2.4637	0.000***
Uppersecondarydegree	0.2949	0.000***	0.6547	0.000***	0.7503	0.001***	0.7537	0.000***
Number of children less than 3 years old	0.4421	0.000***	-0.0665	0.249	1.3620	0.000***	0.3027	0.007**
married	-0.0876	0.128	0.1524	0.152	0.2834	0.105	0.5690	0.000***
Number of children between 4 and 11 years old	0.0554	0.134	-0.0805	0.023**	-0.0280	0.779	0.0440	0.540
Number of children between 12 and 15 years old	0.1620	0.002***	-0.0611	0.213	0.0120	0.931	-0.1913	0.060
age	0.2442	0.000***	0.1662	0.000***	0.0894	0.117	0.2005	0.000***
age2	-0.0020	0.000***	-0.0014	0.000***	-0.0001	0.934	-0.0014	0.005***
Regionalemployment rate	0.7697	0.369	1.6486	0.055	4.9771	0.009***	3.5438	0.022**
Place of residence:Urban	-0.4515	0.000***	0.2931	0.000***	-0.0675	0.727	1.3415	0.000***
Illiterate	-1.5431	0.000***	-0.6407	0.000***	-3.2714	0.000***	-1.4410	0.000***
_cons	-7.7505	0.000***	-6.7782	0.000***	-8.0816	0.000***	-10.8646	0.000***
Number of obs	5570		7077		1190		2684	
LR chi2(11)	1661.81		1061.07		572.75		1013.26	
Prob> chi2	0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.233		0.1234		0.3746		0.3092	
	Log likelihood = -2734.4639		Log likelihood = -3770.2077		Log likelihood = -478.03715		Log likelihood = -1131.9121	

Notes: ***Significant at the 1% level. **Significant at the 5% level

Table 9: Logit Estimated Parameters for "Farmer": Egypt and Tunisia, Male and Female

	Egypt		Tunisia		Egypt		Tunisia	
	Male				female			
Dependent variable: farmer	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**
Explanatory variables								
Uppersecondarydegree	-0.0529	0.665	-0.8685	0.000***	0.4348	0.189	-1.8610	0.001***
married	0.0525	0.746	0.0562	0.723	0.6082	0.007***	-0.3805	0.079
Number of children between 4 and 11 years old	0.0121	0.801	0.0362	0.499	-0.0634	0.546	0.3281	0.005***
Number of children between 12 and 15 years old	0.1324	0.063	-0.0289	0.677	-0.1695	0.203	0.2391	0.122
age	-0.1675	0.000***	-0.0352	0.076	-0.1135	0.008***	-0.0013	0.974
age2	0.0021	0.000***	0.0007	0.000***	0.0011	0.027**	0.0002	0.578
Regionalemployment rate	10.5398	0.000***	4.2917	0.001***	6.2261	0.017**	-13.7378	0.000***
Place of residence:Urban	-2.1784	0.000***	-2.0043	0.000***	-1.5510	0.000***	-2.9750	0.000***
Illiterate	0.9249	0.000***	0.7579	0.000***	0.3562	0.175	1.2641	0.000***
_cons	-6.5861	0.000***	-3.0670	0.003	-2.8738	0.243	10.3635	0.000
Number of obs	2695		3473		554		950	
LR chi2(9)	973.19		1164.26		95.65		479.7	
Prob> chi2	0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.2639		0.254		0.1276		0.3723	
	Log likelihood = -1357.452		Log likelihood = -1709.587		Log likelihood = -327.10135		Log likelihood = -404.4152	

Notes: ***Significant at the 1% level. **Significant at the 5% level

Table 10: The Multinomial Logit Estimated Coefficients for Occupational Structure: Tunisia and Egypt

		Egypt		Tunisia	
Dependent variable: occupation classification for the main job		**Coefficient**	**P>z**	**Coefficient**	**P>z**
professionals	Universitydegree	1.9920	0.000***	3.8729	0.000***
	Uppersecondarydegree	-0.3284	0.045	0.5251	0.013**
	married	-0.3638	0.028	0.6626	0.000***
	age	0.0577	0.114	-0.0800	0.045**
	age2	-0.0011	0.006	0.0008	0.083
	Regionalemployment rate	0.3958	0.756	0.2367	0.895
	Place of residence:Urban	-0.4352	0.000***	0.5290	0.004***
	Illiterate	-3.5652	0.000***	-1.6101	0.028**
	Constant	-0.4252	0.756	-1.3441	0.408
technicians and associateprofessionals	Universitydegree	-0.5629	0.000***	0.2068	0.152
	Uppersecondarydegree	0.8782	0.000***	1.0148	0.000***
	married	-0.4864	0.004***	0.0818	0.533
	age	0.0063	0.851	0.1313	0.000***
	age2	-0.0005	0.178	-0.0020	0.000***
	Regionalemployment rate	-1.4280	0.245	1.2412	0.338
	Place of residence:Urban	-0.1604	0.145	0.6886	0.000***
	Illiterate	-1.2462	0.000***	-1.8186	0.000***
	Constant	2.5685	0.049	-3.6403	0.002
clerks	Universitydegree	-0.2654	0.222	-0.5818	0.002***
	Uppersecondarydegree	0.8027	0.000***	0.3087	0.015**
	married	-0.6597	0.002***	-0.4025	0.006***
	age	-0.0475	0.308	0.0284	0.351
	age2	0.0000	0.939	-0.0006	0.079
	Regionalemployment rate	-2.3264	0.168	-4.1141	0.008***
	Place of residence:Urban	0.0395	0.801	0.8512	0.000***
	Illiterate	-30.9977	1.000	-2.7482	0.000***
	Constant	3.3935	0.056	2.0828	0.126
service workers and shop and market sales	Universitydegree	-1.6420	0.000***	-1.8644	0.000***
	Uppersecondarydegree	-0.2561	0.051	0.0207	0.853
	married	-0.7612	0.000***	-0.3632	0.003***
	age	-0.2031	0.000***	-0.0565	0.016**
	age2	0.0014	0.000***	0.0000	0.856
	Regionalemployment rate	-2.2176	0.078	-4.1541	0.001***
	Place of residence:Urban	-0.4544	0.000***	0.0227	0.827
	Illiterate	0.2224	0.144	-0.0306	0.87
	Constant	9.0685	0.000***	5.7790	0
skilled agricultural and fishery worker	Universitydegree	-2.7087	0.000***	-2.1169	0.000***
	Uppersecondarydegree	-0.7888	0.000***	-1.1474	0.000***
	married	-0.2400	0.129	-0.1581	0.2
	age	-0.3487	0.000***	-0.1126	0.000***
	age2	0.0033	0.000***	0.0012	0.000***
	Regionalemployment rate	7.5412	0.000***	-0.3264	0.783
	Place of residence:Urban	-2.3881	0.000***	-2.3258	0.000***
	Illiterate	1.1371	0.000***	1.3587	0.000***
	Constant	3.5830	0.005***	4.4504	0
craft and related trades workers	Universitydegree	-2.9699	0.000***	-2.7026	0.000***
	Uppersecondarydegree	-0.6182	0.000***	0.1911	0.062
	married	-0.5391	0.000***	-0.0168	0.886
	age	-0.2257	0.000***	-0.0791	0.000***
	age2	0.0015	0.000***	0.0004	0.109
	Regionalemployment rate	-1.0292	0.373	-3.7062	0.001***
	Place of residence:Urban	-0.5886	0.000***	-0.0819	0.391
	Illiterate	0.4967	0.000***	0.4017	0.008***
	Constant	9.4577	0.000***	5.9965	0
plant and machine operators, and assemb	Universitydegree	-3.1131	0.000***	-3.1100	0.000***
	Uppersecondarydegree	-0.5853	0.000***	-0.4149	0.000***
	married	-0.2704	0.101	-0.1517	0.209
	age	-0.1495	0.000***	-0.0383	0.096
	age2	0.0007	0.072	-0.0002	0.444
	Regionalemployment rate	-2.3765	0.054	-0.4240	0.726
	Place of residence:Urban	-0.3841	0.000***	-0.3035	0.002***
	Illiterate	-0.1596	0.278	-0.2203	0.219
	Constant	8.3882	0.000***	3.0122	0.004

Table 10: Continued

		Egypt		Tunisia	
Dependent variable: occupation classification for the main job		**Coefficient**	**P>z**	**Coefficient**	**P>z**
elementary occupations	Universitydegree	-3.0434	0.000***	-3.2717	0.000***
	Uppersecondarydegree	-1.0140	0.000***	-1.0210	0.000***
	married	-0.6811	0.000***	-0.4226	0.000***
	age	-0.1535	0.000***	-0.0515	0.007***
	age2	0.0010	0.002***	0.0002	0.404
	Regionalemployment rate	0.4936	0.706	2.2732	0.030**
	Place of residence:Urban	-0.5350	0.000***	-1.0857	0.000***
	Illiterate	0.5141	0.000***	1.0729	0.000***
	Constant	5.5479	0.000***	2.3220	0.011**
Base outcome: legislators, senior officials and managers					
Number of obs		10009		14184	
LR chi2(64)		8062.88		9253.54	
Prob> chi2		0.0000		0.0000	
Pseudo R2		0.1926		0.1584	
		Log likelihood = -16904.068		Log likelihood = -24591.048	

Notes: ***Significant at the 1% level. **Significant at the 5% level

Table 11: The Multinomial Logit Estimated Coefficients for Industrial Classification: Tunisia and Egypt

		Egypt		Tunisia	
Dependent variable: Industry classification for the main job	**Explanatory variables**	**Coefficient**	**P>z**	**Coefficient**	**P>z**
Mining					
	Universitydegree	1.6089	0.021**	1.4272	0.000***
	Uppersecondarydegree	0.9609	0.087	-0.0871	0.801
	married	0.5301	0.430	0.7265	0.003***
	age	0.0409	0.730	0.0879	0.07
	age2	-0.0006	0.676	-0.0014	0.011**
	Regionalemployment rate	-18.3221	0.000***	-5.3537	0.032**
	Place of residence:Urban	2.2291	0.000***	1.6766	0.000***
	Illiterate	-1.3115	0.122	-1.0448	0.000***
	Constant	9.7262	0.044**	-0.6825	0.749
Manufacturing					
	Universitydegree	0.6980	0.000***	0.5178	0.041**
	Uppersecondarydegree	0.3947	0.000***	1.0386	0.000***
	married	-0.2366	0.030**	0.2258	0.016**
	age	0.1266	0.000***	0.0009	0.956
	age2	-0.0017	0.000***	-0.0006	0.001***
	Regionalemployment rate	-8.7497	0.000***	-0.0455	0.962
	Place of residence:Urban	2.0967	0.000***	2.5184	0.000***
	Illiterate	-0.9100	0.000***	-1.2736	***
	Constant	5.0691	0.000***	-0.5598	0.482
Electricity and Utilities					
	Universitydegree	1.7835	0.000***	0.5023	0.367
	Uppersecondarydegree	0.9258	0.000***	1.5175	0.000***
	married	0.7856	0.009***	0.3205	0.217
	age	0.2265	0.000***	0.0365	0.44
	age2	-0.0025	0.000***	-0.0006	0.23
	Regionalemployment rate	-7.6659	0.000***	-4.3796	0.101
	Place of residence:Urban	1.7494	0.000***	3.1903	0.000***
	Illiterate	-1.3021	0.000***	-1.6977	0.000***
	Constant	-1.4723	0.484	-1.9166	0.399
Construction					
	Universitydegree	0.1414	0.473	1.9522	0.001***
	Uppersecondarydegree	0.1904	0.053	1.5203	0.000***
	married	-0.2962	0.007***	0.4993	0.338
	age	0.1359	0.000***	0.0391	0.668
	age2	-0.0021	0.000***	-0.0004	0.699
	Regionalemployment rate	-10.0652	0.000***	-20.7263	0.001***
	Place of residence:Urban	1.5284	0.000***	1.7623	0.000***
	Illiterate	-0.5529	0.000***	-27.2339	1.000
	Constant	6.6614	0.000***	9.4888	0.063
Commerce					
	Universitydegree	1.1823	0.000***	-0.4040	0.167
	Uppersecondarydegree	0.3077	0.002***	0.4492	0.000***
	married	-0.5395	0.000***	0.3299	0.000***
	age	0.1239	0.000***	0.0622	0.000***
	age2	-0.0015	0.000***	-0.0010	0.000***
	Regionalemployment rate	-8.2487	0.000***	-6.1272	0.000***
	Place of residence:Urban	2.1598	0.000***	1.6808	0.000***
	Illiterate	-0.5711	0.000***	-0.7598	0.000***
	Constant	4.3837	0.000***	3.1221	0.000***
Transportation, Storage and Communication					
	Universitydegree	0.4949	0.008***	0.4493	0.07
	Uppersecondarydegree	0.1923	0.056	0.7161	0.000***
					0.018***
	married	-0.2099	0.074	0.2132	*
	age	0.1993	0.000***	0.0460	0.001***
	age2	-0.0026	0.000***	-0.0007	0.000***
	Regionalemployment rate	-10.0537	0.000***	-7.2881	0.000***
	Place of residence:Urban	2.0345	0.000***	2.3203	0.000***

Table 11: Continued

		Egypt		Tunisia	
Dependent variable: Industry classification for the main job	**Explanatory variables**	**Coefficient**	**P>z**	**Coefficient**	**P>z**
	Illiterate	-1.1148	0.000***	-1.2591	0.000***
	Constant	4.8160	0.000***	3.7799	0.000***
Financial, Insurance and Real Estate					
	Universitydegree	2.9884	0.000***	2.9364	0.000***
	Uppersecondarydegree	0.6759	0.053	1.2839	0.000***
	married	-0.4164	0.209	-0.6213	0.003***
	age	0.3531	0.000***	0.1178	0.006***
	age2	-0.0039	0.000***	-0.0012	0.011
	Regionalemployment rate	-12.0316	0.000***	-14.0407	0.000***
	Place of residence:Urban	2.1552	0.000***	3.4348	0.000***
	Illiterate	-2.1214	0.001***	-1.9049	0.000***
	Constant	-0.6101	0.836	3.6029	0.108
Other services (including public administration)					
	Universitydegree	2.5244	0.000***	2.8392	0.000***
	Uppersecondarydegree	0.6980	0.000***	1.4004	0.000***
	married	-0.2912	0.005***	0.0291	0.739
	age	0.3322	0.000***	0.1357	0.000***
	age2	-0.0036	0.000***	-0.0016	0.000***
	Regionalemployment rate	-6.6337	0.000***	-3.2003	0.000***
	Place of residence:Urban	1.7404	0.000***	2.5733	0.000***
	Illiterate	-1.6667	0.000***	-0.9361	0.000***
	Constant	-1.0729	0.253	-1.3781	0.067
Number of obs		10009		14184	
LR chi2(64)		4567.32		6518.24	
Prob> chi2		0.000		0.000	
Pseudo R2		0.1242		0.1316	
		Log likelihood = -16104.464		Log likelihood = -21502.419	
***Significant at the 1% level	**Significant at the 5% level				

Table 12: Logit Estimated Parameters for "Retired": Egypt and Tunisia, Male and Female

	Egypt		Tunisia		Egypt		Tunisia	
	Male				Female			
Dependent variable: retired	Coefficient	P>z	Coefficient	P>z	Coefficient	P>z	Coefficient	P>z
Explanatory variables								
Universitydegree	0.3746	0.133	-0.9077	0.001***	0.8872	0.000***	0.1031	0.761
Uppersecondarydegree	0.5298	0.012**	-0.5974	0.000***	0.9067	0.000***	-0.0746	0.698
married	0.5597	0.013**	0.0638	0.694	-3.9867	0.000***	-1.6213	0.000***
age	0.1957	0.000***	0.1717	0.000***	0.2707	0.000***	0.0142	0.269
age2	-0.0009	0.001***	-0.0003	0.087	-0.0018	0.000***	0.0010	0.000***
Regionalemployment rate	-4.4410	0.018**	-0.0746	0.962	-2.4885	0.025**	0.8013	0.450
Place of residence:Urban	0.2503	0.137	0.1769	0.132	0.3221	0.002***	-0.1771	0.022**
_cons	-4.0886	0.017	-6.9378	0.000	-6.5968	0.000	-5.4630	0.000
Number of obs	2821		7311		8942		15828	
LR chi2(7)	2156.88		7034.06		3951.38		5764.05	
Prob> chi2	0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.6549		0.7156		0.5652		0.5034	
	Log likelihood = -568.25487		Log likelihood = -1397.4621		Log likelihood = -1520.0959		Log likelihood = -2842.7399	

Notes: ***Significant at the 1% level

Table 13: Household Logit Estimated Parameters: Egypt and Tunisia

	Egypt		Tunisia		Egypt		Tunisia		Egypt		Tunisia	
Dependent variables	**ishomeowner**				**house**				**ispublicrent**			
	Coefficient	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**	**Coefficient**	**P>z**
Explanatory variables												
Universitydegree	0.2202	0.010***	-0.1776	0.134	-1.1158	0.000***	-1.4024	0.000***	0.1783	0.253	-0.5658	0.036**
Uppersecondarydegree	-0.0555	0.427	-0.1246	0.182	-0.3461	0.000***	-0.5027	0.000***	0.0683	0.591	0.0491	0.794
Married	-0.1210	0.156	0.2138	0.037**	-0.1566	0.133	-0.0234	0.759	0.2350	0.192	0.0957	0.662
Number of children less than 3 years old	-0.0177	0.711	0.0010	0.986	0.1391	0.012	-0.0271	0.573	0.1366	0.122	0.0576	0.646
Number of children between 4 and 11 years old	0.0802	0.006***	0.0197	0.589	0.2060	0.000***	0.0474	0.104	0.1886	0.001***	0.0833	0.278
Number of children between 12 and 15 years old	0.1826	0.000***	0.2639	0.000***	0.3009	0.000***	0.1754	0.000***	0.2758	0.003***	0.1293	0.317
age	0.1346	0.000***	0.0878	0.000***	0.0380	0.014**	0.0331	0.008***	-0.2244	0.000***	-0.0223	0.508
age2	-0.0010	0.000***	-0.0004	0.014**	-0.0002	0.115	-0.0002	0.028	0.0017	0.000***	0.0002	0.539
In work	0.1191	0.190	-0.0366	0.719	0.2047	0.047**	-0.0740	0.278	-0.0437	0.820	-0.2247	0.292
Employed	-0.2512	0.000***	-0.3022	0.000***	-0.1030	0.194	0.2903	0.000***	-0.0660	0.593	0.0642	0.696
Farmer	0.6566	0.000***	0.4041	0.005***								
Regionalemployment rate	4.1979	0.000***	0.8754	0.354	-1.4862	0.093	6.7262	0.000***	5.8547	0.000***	1.6115	0.377
Place of residence:Urban	-1.1680	0.000***	-1.2333	0.000***	-1.9748	0.000***	-0.6768	0.000***	-1.8414	0.000***	-2.1714	0.000***
Illiterate	0.2113	0.004***	0.0516	0.598	0.6594	0.000***	1.0180	0.000***	0.3874	0.008***	0.6713	0.001***
constant	-6.5599	0.000***	-1.2013	0.162	-1.2888	0.144	-4.836061	0.000	1.3709	0.296	0.4004	0.814
Number of obs	7719		11280		7719		11280		2627		1327	
LR chi2(14)	1377.4300		862.8800		1301.3500		1305.14		1115.7500		222.44	
Prob> chi2	0.0000		0.0000		0.0000		0.000		0.0000		0.000	
Pseudo R2	0.1391		0.1056		0.1795		0.1014		0.3090		0.1309	
	Log likelihood = -4261.1228		Log likelihood = -3654.1776		Log likelihood = -2975.2135		Log likelihood = -5780.1393		Log likelihood = -1247.3148		Log likelihood = -738.64797	

Source: ***Significant at the 1% level. **Significant at the 5% level