Determinants of Informal Sector Employment in Urban Labor Markets in Cameroon

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Abstract

This study uses data from the Cameroon Survey on Employment and the Informal Sector (CSEIS) carried out in 2010 by the National Institute of Statistics (NIS) to examine the determinants of informal sector employment in the urban areas of Cameroon. The study applied a multinomial logit model to analyze gender and age group differences. The result showed that the determinants of informal employment in Cameroon`s urban labor market vary with gender and age group. Household headship, household size, tertiary education and marital status were found to be important variables in determining the choice of employment sector.

INTRODUCTION

There is increasing interest to analyze and identify the determinants of sectoral employment in labor markets because of the vital role employment plays in economic growth and development. Nonetheless, in many developing countries the informal sector accounts for most of the employment in the economy. Therefore, the task of identifying development strategies that can generate new employment, income opportunities and reduce informality and unemployment is one of the important challenges governments are facing in developing countries in general and Cameroon in particular. In Cameroon for instance, this task becomes more urgent as the urbanization rate is fast increasing moving from 30.0 per cent in 1987 to 48.8 per cent in 2005 and further to 60.2 per cent in 2012 (Dzossa, 2014).

Urban labor markets in developing countries are widely recognized as having two distinct sectors/segments namely regulated/protected formal sector and an unregulated/unprotected informal sector (Pradhan & Van Soest, 1995). Mazumdar (1989) describes an urban labor market structure in a typical developing country as being subdivided into three main categories: the formal sector (public and private), the informal sector (comprising wage labor, self-employed, paid domestic workers, those earning a monthly salary or those working on casual basis) and the unemployed. This categorization ignores unpaid

workers (people who work without pay in an economic enterprise operated by a related person who forms a significant proportion of urban labor force. Among the most important challenges facing governments in developing countries, including Cameroon, is the task of identifying development strategies that can generate new employment and income opportunities, and reduce under-employment and unemployment. The urgent need to create employment opportunities is under-scored by the fact that the labor force grows more than the population. Persistent slow economic growth, particularly in the public sector, has forced many people, notably school leavers and college graduates, into marginal activities in small-scale agriculture and the urban informal economy. In recent years, many economies in both developed and developing countries have experienced transformations in their labor market structures resulting from such trends as globalization and economic restructuring.

In Cameroon as in many other Sub-Saharan countries, government is concerned about the issue of development and therefore has put the labor market at the center of attention. However, the informal sector is an increasingly important part of the Cameroon economy. The sector plays a crucial role in providing Cameroonians with some basic services not sufficiently provided by the formal sector such as health care, education, recreation, art, and social services, to name a few. According to the National Institute of Statistics (NIS), the informal sector has expanded to about 51 per cent of GDP and generates more than 80 per cent of new jobs in 2010. This is mainly because government shortcomings have caused a major deterioration in social services (and an increase in their cost) resulting in growth of the informal sector. Hence, informal sector activities are predominant, 90.4 per cent of the working population is in the sector. This percentage is higher for women (93.8 per cent at the national level and 85.7 per cent in urban area) than for men (87.1 per cent at the national level and 65.2 per cent in urban area).

The existing literature has enumerated different views of looking into the issue of why informal labor markets exist. Conventional view in the literature is that well-paid, secured and safe jobs are found in the formal sector, while the informal sector is defined as small-scale, often not legal, with low productivity and low wages (Lewis, 1954; Todaro & Harris, 1970). Studies for a number of developing countries argue that informal employment may be in fact a voluntary choice, because, after weighing costs and benefits, they find that they are not better off working in the formal sector (Gindling, 1991; Maloney, 2004). Fields (2005) and others argue that in urban informal labor markets in developing countries there exists an upper tier and lower tier. The upper tier comprises the competitive part, i.e. those who voluntarily choose to be informal and the lower tier is the part that consists of individuals who cannot afford to be unemployed but have no hope to get a formal job.

In this effort, it is critical to better understand individual employment choices: that is, which type of sectors people prefer in the urban cities in Cameroon. The objective of this paper is to identify the main determinants of informal employment from an individual perspective. Although the rapidly increasing importance of the informal sector provides a compelling reason for better understanding the nature of the labor market in Cameroon and identifying people working in the informal sector, little is known about why people choose to

work for the different sectors in the informal sector. Therefore, this study investigates the factors that determine an individual's choice of informal employment sector in the urban areas in Cameroon.

The Cameroon economy is characterized by the predominance of the agricultural sector, mainly artisanal, which employs nearly 70 per cent of the labor force and contributes nearly 30 per cent of the GDP. The services sector and the industrial sector are underdeveloped. In Cameroon, 42.3 per cent of non-agricultural GDP in 1995 was generated by the informal sector, so slightly less than 34 per cent of national GDP. According to Cameroon's national accounts, the informal sector employed 93 per cent of the workforce in 2003. In addition, this sector is the one that has created more wealth in Cameroon since 2003. With this importance in creating wealth, the informal sector has a special place in public development programs in Cameroon during the last years. Many programs supporting the informal sector have been initiated. The most important of them are the Integrated Program of Support for Informal Sector Actors (PIAASI) and the Program of Support to Rural Jobs Development (PADER) which essentially boil down to training and financing of self-employment.

Jobs in the public, for-profit, and nonprofit sectors may differ in several ways, including pay, advancement opportunities, job security, skill requirements, and intrinsic rewards (Blank, 1985; Lewis & Frank, 2002). Thus, workers with a particular set of personal characteristics and preferences may find employment in the nonprofit sector more attractive while others with a different set of characteristics and skills may prefer public or for-profit employment over nonprofit employment (Blank, 1985).

This study views an individual's sector choice as a result of preference satisfaction, but it also recognizes that people's choices are shaped by situational factors which tend to be out of their control. While individuals actively choose a specific employment sector to better satisfy their preferences, their choice sets are restricted by social norms and stereotypes. First, in terms of actively choosing to work for nonprofits, individuals make sector choices to maximize their utility. When saying people maximize utility, it does not necessarily mean they maximize their material self-interest only. As a matter of fact, contemporary rational choice theory says nothing about what utility consists of. Contemporary rational choice theorists rather argue that utility maximization involves doing what one most prefers to do (Hausman & McPherson, 2006). In this sense, preference satisfaction includes not only meeting the economic and self-interest needs and wants but also fulfilling the intrinsic motivations. Therefore, the choice of employment sector is based both on the economic gains and the desirability of working in a particular sector (Adamchik & Bedi, 2000). Because a person's intrinsic motivation affects one's perception of desirability of working in a sector, estimation of the sector choice should include the intrinsic motivation of an individual.

This research terms the intrinsic motivation associated with employment in the nonprofit sector as nonprofit motivation. Secondly, apart from utility maximization, an individual's sector choice is also shaped by structural factors, in other words, the availability of the alternatives from which they can choose. This study focuses on industry segregation across the sectors. In other words, depending on which industry an individual works in, he or she may have limited choice of employment sector because the distribution of industries differs across

the public, for-profit, and nonprofit sectors. Some industries are concentrated in the nonprofit sector and are scarce in the for-profit sector, and vice versa. For example, a majority of hospitals are nonprofit (American Hospital Association, 2009) while most manufacturing firms operate on a for-profit basis. In this study, the following factors that influence an individual's sector choice are examined: 1) an individual's earnings differential among the sectors, 2) one's industry, 3) holding a managerial or professional position, 4) one's family situation, and 5) the intrinsic motivation that leads to nonprofit employment. Below, each hypothesis is explained in reference to the literature.

METHOD
The Data
Data used in this study have been taken from the second Cameroon Survey on Employment and the Informal Sector (CSEIS) carried out by the National Institute of Statistics in 2010. This survey takes place after every five years, with the first one carried out in 2005 and the second one in 2010. The first survey provides information on the labor market conditions and incomes from various activities. The second survey which covered the entire territory of Cameroon consists of two phases: the first phase is an employment survey to collect data on socio-demographic characteristics and employment; the second phase is a survey of businesses led among non-agricultural informal units identified during the first phase. This survey supports the analysis of the labor market (2005 survey), including business conditions, formation of income, characteristics of unemployment and under employment.

This study uses the data from the first phase with 30,458 individuals surveyed. This research also focuses on the urban area (18,225 individuals – 52.91 per cent) because of the homogeneity of the rural area that focuses mainly on agricultural activities. The main variable of interest in this study will be the sectors of employment. The sectors of choice in urban areas are agriculture, industrial, commerce, and services which include household economic activities. Agriculture according to the survey includes all persons who declared that they were working on their own or family lands or cattle post either in agricultural, livestock or fishing or as paid employees on similar establishments. Service and household economic activities refer to individuals who work with pay in an economic enterprise operated by a related person living in the same household. This may sometimes involve working in a household or a family business without pay. The results presented take into account the weights to be representative of the population.

Model Specification
The main objective of this paper is to investigate the determinants of employment sector choices in urban areas in Cameroon. The study uses a multinomial logit (MNL) model. The multinomial logit model extends the binary logit model to more than two choices. The dependent variable has four unordered categories since the decision to work in a particular sector is assumed not to be sequential or ordered; rather this depends on the sector in which an individual finds a job. This is a justification for using a MNL. The MNL regression is an unordered generalization of the logistic regression model for two alternatives. The

logistic model can be derived from the MNL if *J=1* and if random utilities u_{ij} have independent extreme value distributions, where their difference can be shown to have a logistic distribution. The four different sectors in the labor market are; agriculture, industries, trade and service sectors.

The multinomial model can be described as follows: with Y_i representing a discrete choice among J alternatives (employment sectors), the utility u_{ij} of participating in the j-th sector for i-th individual can be written as:

$$u_{ij} = v_{ij} + \varepsilon_{ij} \tag{1}$$

Where v_{ij} is a systematic component (deterministic) and ε_{ij} is the random (error) component Another assumption is that a utility maximizing individual i will choose alternative j if u_{ij} is largest of $u_{i1}, u_{i2}, ..., u_{iJ}$. Hence, the probability that i chooses j can be written as:

$$p_{ij} = prob\{Y_{i=j}\} = prob\{\max(u_{i1}, ..., u_{iJ}) = u_{ij}\} \tag{2}$$

Based on (1) and (2), and the assumption that the error term ε_{ij} exhibits the standard Type I extreme value distribution, the general expression of the MNL model is specified as:

$$p_{ij} = \frac{\exp\{v_j\}}{\sum_{k=1}^{J} \exp\{v_k\}} \tag{3}$$

With the expected utilities, v_{ij}, generally modeled as:

$$In\left[\frac{p_{ij}}{p_k}\right] = \alpha_j + X_i \beta_j = X_i \beta_j \tag{4}$$

where X_i are the individual and household characteristics and β_j are reflecting The effects of covariates on odds of an alternative being selected (Maddala, 1983; Greene, 1997). Therefore, in order to explain sector selection, the model allows the dependent variable to take four mutually exclusive choices, j=1, 2, 3 or 4 and is defined as follows;

$$(Y_{i=j}) = \frac{e^{\beta_j X_i}}{\sum_{k=1}^{4} e^{\beta_k X_i}} \tag{5}$$

Where;
$Y_i = 1$ if individual is employed in the agricultural (primary) sector
$Y_i = 2$ if individual is employed in the industrial sector
$Y_i = 3$ if individual is employed in the trade sector
$Y_i = 4$ if individual is employed in the service sector

The multinomial logit which allows for more than two categories assumes that the errors are independent for each category (employment sector), as a result, suffers from the independence of irrelevant alternatives (IIA) assumption (Greene & Hensher, 2010). Independence from irrelevant alternatives states that the odds of choosing j over alternative k should be independent of the choice set for all pairs j, k. This can be tested using the Hausman - McFadden test (Cheng & Scott, 2006; Hausman & McFadden, 1984). Under the IIA, no systematic change in coefficients is expected with the exclusion of one of the outcomes from the model. Violation of the IIA assumption implies multinomial logit model is not an efficient and consistent estimator. Consequently, to ascertain the validity of the multinomial logit model, a test for IIA is conducted.

The specification of MNL does not allow the possibility of working concurrently in more than one sector. This restriction may be unreasonable if individuals work in two sectors like having a family business and working in either industry or trade sectors concurrently. However, the analysis does not consider information on second or multiple job holding.

Explanation of Variables in the model

The dependent variable in this study has four categories/outcomes. In order to facilitate understanding of the effects of the coefficients of the model, marginal effects or predicted probabilities (that is, change in predicted probability associated with changes in the explanatory variables) are developed on the basis of the MNL model of being in each of the four outcomes. Marginal effects (ME) are evaluated at the sample mean. The independent variables include personal characteristics (age, sex, marital status, level of education, household head), household characteristics (household size and number of children below school age (5 years)) and town characteristics (dummy for capital cities).

Age: In this study, age was taken as a discrete variable of completed years of an individual between 15 years to 65 years as this is in line with the definition of the labor force in Cameroon. However, since the access to jobs for the young people (15 to 34 years old) is more difficult because of their lack of experience, the analysis will be performed on two age categories of 15 to 34 years old and 35 to 45 years old. The assumption is that the probability to be employed increases with age. Therefore, the more the experience an individual will have, the easier will be his/her access to jobs.

Gender: this is a dummy variable which will take the value 1 for male and 0 otherwise. Gender has a great role in choosing the sectors of employment due to the nature of activities carried out in different sectors. More so, because of the flexibility needed by some women on the labor market, especially for those who cannot afford enough to pay for child care assistance and for housewife, they will prefer to seek employment in sectors with flexible working conditions and working hours.

Marital Status: This variable is defined as a dummy with individuals who are married equally to 1 and 0 otherwise.

Level of education is classified into four categories: 0= No education (reference category); 1= Primary; 2= Secondary; 3= Tertiary (University and other related categories of higher education). Informal sector activities in Cameroon as in general do not require long studies. A large proportion of workers in the

informal sector will have attended at most primary education. The figures show that individuals who have attended at most primary education and are employed in the informal sector are 63.8% at the national level and 39.8% in the urban area. Whereas in the formal sector the proportion of those that have attended at most primary education is only 12.9% at the national level and 9.9% in the urban area (Nzeuyang, 2012).

Household Headship: This was defined as a dummy, with female head = 1, and 0 otherwise. Household head is assumed to be the key decision maker in the family and provides for the household both materially and financially.

Capital city: A dummy variable will be generated for the capital cities This because the levels of informality and development are high in these cities especially in Douala and Yaoundé which are the economic and political capital cities of Cameroon respectively.

Household size: It is a continuous variable ranging from 1 to 12 for the households residing in urban areas. This shows the number of people staying together as a family. The bigger the size, the more likely this will influence the decision of sector of employment as household heads will preferably seek employment with high remunerations and financial advantages.

RESULTS AND DISCUSSION

In order to facilitate understanding of the effects of the coefficients, marginal effects or predicted probabilities (that is, change in predicted probability associated with changes in the explanatory variables) are developed on the basis of the MNL model of being in each of the four outcomes. Marginal effects (ME) are evaluated at the sample mean. Estimates of the probability of sectoral choice are presented and discussed for all categories, by gender and by age groups. Therefore, five MNL models estimated: one for the full sample, two for male and female samples, and two for age groups (15 to 34 years and 35 to 65 years) by employment sector as shown in the results tables below. The primary (agriculture) sector is the base category in all cases. Using the chi2 Wald test, the null hypothesis for equality of coefficients between any pair of employment sectors was rejected at the 1 per cent significance level (see regression tables). This indicates that the urban labor market in Cameroon is heterogeneous and the decomposition of the labor market into primary, industrial, trade and service sectors is suitable.

Table 1 shows the results for the entire urban sample. The table shows that variables such as tertiary education, household size and household headship, capital cities (Yaoundé and Douala) are significant for all the sectors of employment. The positive effect of tertiary education implies that it enhances the opportunities for working in all the sectors relative to having no education (omitted category). As for head household size, if the number of household members increase in the family, the likelihood of working in any of the sectors increases. This implies that these variables enhance the likelihood of all sectors` employment.

The age variable is significant for industrial and service sectors (positive coefficients) and insignificant for the trade sector (negative coefficient) of employment. This signifies that as individuals in urban areas grow older, they are more likely to prefer industrial and service sectors employment. The results

further show that the young individuals are more likely to be employed in the trade sector even though the coefficient and marginal effect are insignificant.

Sex is important for industrial (with a positive effect) and trade sectors (with a negative effect) indicating that being male as opposed to being female increases the likelihood of being in the industrial sector of employment and reduces that of being in the trade sector employment. Although this is subject to further research, it may connote some kind of sex discrimination in the labor market in which most employers in the industrial sector will prefer to hire men rather than women despite both groups having probably attained the same level of human capital.

Table 1. Total sample

Variables	Industry		Trade		Service	
	Coeff.	Marginal	Coeff.	Marginal	Coeff.	Marginal
age	0.053***	0.005***	0.022	-0.001	0.025**	0.001**
	(0.015)	(0.002)	(0.015)	(0.002)	(0.013)	(0.002)
agesq	0.001***	0.000**	-0.001***	-0.000	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
sex	0.026**	0.021**	-0.264***	-0.0315***	-0.078	0.0019
	(0.083)	(0.009)	(0.087)	(0.00847)	(0.073)	(0.011)
married	0.210**	0.002**	0.159	-0.0110	0.297***	0.037***
	(0.096)	(0.010)	(0.097)	(0.00954)	(0.086)	(0.013)
catholics	0.115	0.005	0.186	0.0153	0.069	-0.010
	(0.130)	(0.014)	(0.136)	(0.0121)	(0.115)	(0.017)
protestants	0.115	0.0231	-0.086	-0.0129	-0.016	-0.009
	(0.137)	(0.015)	(0.144)	(0.0128)	(0.121)	(0.018)
muslims	0.288*	-0.037**	1.102***	0.122***	0.427***	-0.037*
	(0.158)	(0.016)	(0.158)	(0.0168)	(0.136)	(0.021)
primary	0.323**	0.018	0.296**	0.0109	0.250**	0.008
	(0.154)	(0.018)	(0.149)	(0.0166)	(0.126)	(0.022)
secondary	0.781***	0.028	0.652***	0.000688	0.757***	0.055**
	(0.157)	(0.018)	(0.153)	(0.0164)	(0.131)	(0.022)
tertiary	0.994***	0.052***	0.900***	0.0638***	1.768***	0.248***
	(0.217)	(0.019)	(0.219)	(0.0182)	(0.189)	(0.025)
hhsize	-0.034***	0.0014	-0.091***	-0.008***	-0.037***	0.0026
	(0.011)	(0.001)	(0.012)	(0.00130)	(0.010)	(0.002)
hhhead	0.374***	0.024**	0.705***	0.0348***	0.589***	0.043***
	(0.112)	(0.012)	(0.118)	(0.0116)	(0.101)	(0.015)
cap_cities	0.786***	0.006***	1.112***	0.0498***	0.911***	0.044***
	(0.078)	(0.008)	(0.082)	(0.00821)	(0.070)	(0.011)
Constant	-1.016***		-0.440		0.348	
	(0.298)		(0.306)		(0.255)	
Observations	10,683	10,683	10,683	10,683	10,683	10,683
Wald chi2(39)	921.96					
Prob > chi2	0.000					
Pseudo R2	0.0359					
Log likeli	-1256.064					

Source: Authors (2018)
Note: *** p<0.01, ** p<0.05, * p<0.1; Robust standard errors in parentheses

From a non-discriminatory point of view, employers may have a preference for men to women because of their varying levels of human capital skills, in which men in general are more advantaged than women. Still, as long as

it is wage employment where there is little flexibility and hours of work are fixed, women may select themselves into the inferior informal sector (trade) in order to also cope with care work (caring for children and domestic chores). To an extent, this sector enables them to combine productive work and care work.

The coefficient of married variable is positive and significant in industrial and service sectors. It could be that married people as opposed to unmarried people more likely prefer to work in industrial and service sectors over primary sector (reference category).

Table 2. Male sample

Variables	Industry		Trade		Service	
	Coeff.	Marginals	Coeff.	Marginals	Coeff.	Marginals
age	0.069***	0.0057**	0.063***	0.0037	0.030	-0.0054*
	(0.022)	(0.0025)	(0.024)	(0.0025)	(0.019)	(0.0031)
agesq	-0.001***	0.000	-0.001***	0.000**	-0.001***	0.000
	(0.000)	(0.000)	(0.003)	(0.000)	(0.0002)	(0.000)
married	-0.145	-0.0188	0.171	0.0366**	-0.0971	-0.0230
	(0.184)	(0.0170)	(0.190)	(0.0156)	(0.170)	(0.0211)
catholics	0.118	0.0125	0.145	0.0133	0.0180	-0.0198
	(0.191)	(0.0191)	(0.202)	(0.0170)	(0.173)	(0.0238)
protestants	0.0789	0.0291	-0.164	-0.0144	-0.101	-0.0208
	(0.199)	(0.0207)	(0.214)	(0.0179)	(0.180)	(0.0253)
muslims	0.115	-0.0525**	0.985***	0.108***	0.393**	-0.0180
	(0.226)	(0.0216)	(0.228)	(0.0226)	(0.198)	(0.0284)
primary	0.398	0.0322	0.158	-0.0135	0.269	0.0162
	(0.251)	(0.0288)	(0.239)	(0.0258)	(0.204)	(0.0349)
secondary	0.881***	0.0433	0.652***	-0.00365	0.758***	0.0427
	(0.253)	(0.0284)	(0.241)	(0.0257)	(0.208)	(0.0346)
tertiary	0.960***	-0.0591**	0.848***	-0.0747***	1.817***	0.261***
	(0.323)	(0.0297)	(0.319)	(0.0272)	(0.277)	(0.0374)
hhsize	0.0308*	0.001	0.100***	0.0106***	0.0237	0.00614***
	(0.0168)	(0.00183)	(0.0184)	(0.00190)	(0.015)	(0.0024)
hhhead	0.756***	0.0192*	0.621***	-0.0393**	1.144***	0.143***
	(0.195)	(0.0198)	(0.203)	(0.0184)	(0.175)	(0.0242)
cap_cities	0.771***	-0.00203	0.968***	0.0295***	0.890***	0.0503***
	(0.113)	(0.0117)	(0.119)	(0.0112)	(0.103)	(0.0147)
Constant	-1.425***		-0.892*		0.115	
	(0.449)		(0.473)		(0.393)	
Observations	5,324	5,324	5,324	5,324	5,324	5,324
Wald Chi2 (36)		522.08				
Prob>chi2		0.000				
pseudo R2		0.0426				
log likelihood		-6127.4548				

Source: Authors (2018)
Note: *** p<0.01, ** p<0.05, * p<0.1; Robust standard errors in parentheses

By sex, Table 2 shows that for males who have secondary, tertiary education, have large family sizes, household heads and live in the capital cities of Yaoundé and Douala have a positive correlation with sectoral choice for all

sectors. Married male individuals have a positive and significant correlation with the trade sector employment. In addition to being household heads, most married males are also the main bread winners in the family.

Among females (Table 3), age has a positive correlation with industrial sector employment. Females with tertiary education and live in the capital cities are more likely to work in all the sectors.

Table 3. Female sample

Variables	Industry		Trade		Service	
	Coeff.	Marginals	Coeff.	Marginals	Coeff.	Marginals
age	0.0392*	0.00681***	-0.0118	-0.00277	-0.00324	-0.00353
	(0.0205)	(0.0023)	(0.0208)	(0.00223)	(0.0174)	(0.00284)
agesq	-0.001***	-0.000***	-0.0002	0.000	-0.0003	0.000
	(0.0003)	(0.000)	(0.0003)	(0.000)	(0.0002)	(0.000)
married	0.166	-0.0208	0.283	0.00134	0.380***	0.0510***
	(0.136)	(0.0146)	(0.139)	(0.0142)	(0.120)	(0.0184)
catholics	0.117	0.000313	0.224	0.0174	0.110	-0.00306
	(0.179)	(0.0190)	(0.184)	(0.0172)	(0.156)	(0.0238)
protestants	0.159	0.0200	-0.0235	-0.0122	0.0595	6.72e-05
	(0.190)	(0.0205)	(0.197)	(0.0182)	(0.164)	(0.0254)
muslims	0.428*	-0.0211	1.235***	0.147***	0.407**	-0.0678**
	(0.223)	(0.0232)	(0.220)	(0.0251)	(0.190)	(0.0298)
primary	0.314	0.0102	0.440**	0.0325	0.264	0.000179
	(0.199)	(0.0241)	(0.192)	(0.0216)	(0.161)	(0.0291)
secondary	0.713***	0.0119	0.696***	0.00626	0.807***	0.0724**
	(0.206)	(0.0242)	(0.201)	(0.0214)	(0.170)	(0.0296)
Tertiary	1.066***	0.0454	1.008***	0.0504**	1.774***	0.237***
	(0.307)	(0.0278)	(0.309)	(0.0253)	(0.268)	(0.0355)
hhsizeF	-0.0336**	0.00104	-0.0842***	-0.00794***	-0.0345**	0.00237
	(0.0156)	(0.00173)	(0.0169)	(0.00185)	(0.0145)	(0.00235)
hhheadF	-0.0864	-0.0606***	0.802***	0.101***	0.201	-0.0144
	(0.177)	(0.0199)	(0.169)	(0.0166)	(0.152)	(0.0236)
Cap cities	0.792***	-0.0102	1.260***	0.0727***	0.923***	0.0353**
	(0.109)	(0.0115)	(0.115)	(0.0120)	(0.0970)	(0.0151)
Constant	-0.711*		-0.332		0.616*	
	(0.400)		(0.402)		(0.332)	
Observations	5,359	5,359	5,359	5,359	5,359	5,359
wald chi2 (36)		490.91				
prob>chi2		0.000				
pseudo R2		0.0375				
log likelihood		-6368.404				

Source: Authors (2018)
Note: *** p<0.01, ** p<0.05, * p<0.1; Robust standard errors in parentheses

By age cohorts, all the educational categories, household size, and capital cities are important for all the three sectors among younger individuals.

Table 4. Sample for cohort of 15 to 34 years

Variables	Industry		Trade		Service	
	Coeff.	Marginals	Coeff.	Marginals	Coeff.	Marginals
Age	-0.00319	-0.00466	0.0372	0.00294	0.0279	0.00372
	(0.0447)	(0.0046)	(0.0456)	(0.00441)	(0.0401)	(0.00581)
Agesq	0.000250	0.0002*	-0.00131	-9.83e-05	-0.00109	-0.00017
	(0.00105)	(0.0001)	(0.00107)	(0.000101)	(0.000954)	(0.00013)
Sex	-0.144	-0.00214	-0.200**	-0.0118	-0.133	0.000669
	(0.0956)	(0.009)	(0.0993)	(0.0098)	(0.085)	(0.0123)
Married	0.252*	-0.0214	0.435***	0.0126	0.450***	0.044***
	(0.142)	(0.0137)	(0.144)	(0.0130)	(0.129)	(0.0172)
catholics	0.147	0.0108	0.169	0.0128	0.0642	-0.0139
	(0.158)	(0.0156)	(0.162)	(0.0146)	(0.140)	(0.0199)
protestants	0.186	0.0372**	-0.112	-0.0174	-0.0329	-0.0190
	(0.166)	(0.0169)	(0.173)	(0.0154)	(0.147)	(0.0213)
Muslims	0.301	-0.0229	1.003***	0.121***	0.317*	-0.0585**
	(0.188)	(0.0184)	(0.187)	(0.0200)	(0.163)	(0.0243)
Primary	0.574***	0.0544**	0.491**	0.0369*	0.159	-0.0544*
	(0.218)	(0.0221)	(0.206)	(0.0197)	(0.172)	(0.0291)
secondary	0.958***	0.060***	0.861***	0.0390**	0.574***	-0.0252
	(0.220)	(0.0218)	(0.208)	(0.0194)	(0.173)	(0.0289)
Tertiary	0.930***	-0.00682	0.922***	-0.00960	1.182***	0.118***
	(0.286)	(0.0245)	(0.280)	(0.0228)	(0.239)	(0.0334)
Hhsize	-0.0397***	0.00137	-0.1000***	-0.00939***	-0.0403***	0.00341*
	(0.0136)	(0.00146)	(0.0149)	(0.00161)	(0.0125)	(0.00196)
Hhhead	0.880***	-0.0205	1.090***	0.0170	1.189***	0.101***
	(0.177)	(0.0150)	(0.181)	(0.0146)	(0.165)	(0.0194)
cap_cities	0.892***	-0.00702	1.190***	0.0449***	1.041***	0.0545***
	(0.0948)	(0.00953)	(0.0994)	(0.00971)	(0.0861)	(0.0124)
Constant	-0.662		-0.724		0.517	
	(0.537)		(0.550)		(0.470)	
Observations	7,726	7,726	7,726	7,726	7,726	7,726
wald chi2		567.19				
prob>chi2		0				
pseudo R2		0.0308				
log likelihood		-9056.317				

Source: Authors (2018)
Note: *** p<0.01, ** p<0.05, * p<0.1; Robust standard errors in parentheses

The determinants of employment among older individuals (35 to 65 years) are summarized in Table 5. Being a household head, having tertiary education as well as living in the capital cities increase the likelihood of being employed in all sectors.

Table 5. Sample for cohort of 35 to 65 years

Variables	Industry		Trade		Service	
	Coeff.	Marginals	Coef.	Marginals	Coef.	Marginals
Age	-0.0809	-0.006	-0.236**	-0.0286***	0.0083	0.0272*
	(0.101)	(0.012)	(0.101)	(0.0101)	(0.0878)	(0.0140)
Agesq	0.0005	0.000	0.0019*	0.0002**	-0.0005	-0.0003**
	(0.001)	(0.0001)	(0.001)	(0.000)	(0.0009)	(0.0002)
Sex	0.805***	0.099***	-0.268	-0.087***	0.361**	0.0253
	(0.186)	(0.0199)	(0.196)	(0.0187)	(0.162)	(0.0234)

Variables	Industry		Trade		Service	
	Coeff.	Marginals	Coef.	Marginals	Coef.	Marginals
married	-0.187	0.000120	-0.195	-0.00144	-0.241	-0.0226
	(0.162)	(0.0170)	(0.174)	(0.0168)	(0.147)	(0.0213)
catholics	0.0506	-0.00598	0.221	0.0194	0.0770	-0.00206
	(0.232)	(0.0264)	(0.251)	(0.0215)	(0.207)	(0.0308)
protestants	-0.0535	-0.00602	-0.0389	-0.00184	-0.0161	0.00411
	(0.245)	(0.0282)	(0.267)	(0.0228)	(0.217)	(0.0328)
muslims	0.218	-0.0690**	1.324***	0.128***	0.651***	0.0109
	(0.290)	(0.0307)	(0.296)	(0.0310)	(0.251)	(0.0387)
Primary	0.132	-0.0357	0.295	-0.00202	0.582***	0.100***
	(0.224)	(0.0322)	(0.221)	(0.0285)	(0.192)	(0.0332)
secondary	0.830***	-0.00963	0.601**	-0.0485*	1.376***	0.201***
	(0.236)	(0.0323)	(0.244)	(0.0288)	(0.212)	(0.0342)
Tertiary	1.410***	-0.127***	1.184***	-0.130***	3.130***	0.479***
	(0.379)	(0.0332)	(0.398)	(0.0296)	(0.345)	(0.0367)
Hhsize	0.00721	0.00150	-0.0335	-0.00508**	0.00700	0.00340
	(0.0215)	(0.00246)	(0.0232)	(0.00236)	(0.0195)	(0.00310)
Hhhead	0.457**	0.0641***	0.599***	0.112***	0.268*	-0.0620**
	(0.201)	(0.0218)	(0.221)	(0.0224)	(0.176)	(0.0262)
Capcity	0.566***	0.00522	1.031***	0.0684***	0.634***	0.0139
	(0.143)	(0.0161)	(0.152)	(0.0153)	(0.126)	(0.0198)
Constant	2.199		5.447**		0.532	
	(2.350)		(2.375)		(2.068)	
Observations	2,957	2,957	2,957	2,957	2,957	2,957
wald chi2		441.18				
prob>chi2		0.000				
pseudo R2		0.0705				
log likelihood		-3407.4361				

Source: Authors (2018)

Note: *** p<0.01, ** p<0.05, * p<0.1; Robust standard errors in parentheses

CONCLUSION

The paper assessed the determinants of informal sector employment in the urban cities of Cameroon based on data from the Cameroon Survey on Employment and the Informal Sector (CSEIS) carried out in 2010 by the National Institute of Statistics. There are significant differences in industrial, trade and service sectors of employment when the analysis is broken by gender and age cohorts. The findings reveal that the key labor supply factors important for employment in the public, private and informal sectors of the Cameroon urban labor market vary by sex. Household headship, household size, tertiary education, and marital status are important variables in determining the employment sector choice.

REFERENCES

Adamchik, V. A., & Bedi, V. (2000). Wage Differentials Between the Public and The Private Sectors: Evidence from an economy in transition. *Labour Economics, 7*, 203–224.

American Hospital Association. (2009). Annual Survey Database. Retrieved from www.ahadata.com

Blank, R. (1985). An Analysis of Worker's Choice Between Employment in The Public and Private Sectors. *Industrial and Labor Relations Review, 38*(2), 211–224

Cheng, S., & Scott Long J. (2006). Testing for IIA in the Multinomial Logit Model. *Sociological Methods & Research, 35*, 583–600.

Dzossa, A. (2014). Entrepreneurship and informality in Cameroon. Solutions Work Conference, Partnerships for Jobs and Youth Employment Istanbul (Turquia).

Fields, G. (2005). A Guide to Multi-Sector Labor Market models. *World Bank Social Protection Discussion Paper Series,* No. 0505, World Bank, Washington D.C.

Gindling, T. (1991). Labor Market Segmentation and the Determination of Wages in the Public, Private-Formal and Informal Sectors in San-Jose, Cota-Rica, *Economic Development and Cultural Change*, *39*(3), 585–605.

Greene, W. (1997). *Econometric Analysis, 3rd edition.* Upper Saddle River, New Jersey: Prentice-Hall International Inc.

Greene, W., & Hensher, D. (2010). Ordered Choices and Heterogeneity in Attribute Processing. *Journal of Transport Economics and Policy, 44*(3), 331–364.

Hausman, D., & McPherson, M. (2006). *Economic Analysis, Moral Philosophy and Public Policy 2nd ed*. New York: Cambridge University Press.

Hausman, J., & McFadden D. (1984). Specification Tests for the Multinomial Logit Model. *Econometrica, 52*, 1219–40.

Lewis, G., & Frank, S. (2002). Who Wants to Work for Government?. *Public Administration Review, 62*, 395–404.

Lewis, W. (1954). Economic Development with Unlimited Supplies of Labor. in *Manchester School*, *22*(2), 139–191.

Maddala, G. (1983). *Limited-Dependent and Qualitative Variables in Econometrics,* New York: Cambridge University Press.

Maloney, W. (2004). Informality Revisited. *World Development*, *32*(7), 1159–78.

Mazumdar, D. (1989). Microeconomic Issues of Labor Markets in Developing Countries: Analysis and Policy Implications. Washington, D.C: The World Bank.

Nzeuyang, C. (2012). Is There Evidence of Discrimination in Urban Labour Market in Cameroon? Unpublished Master Dissertation, Università di Torino, Italy.

Pradhan, M., & Van Soest A. (1995). Formal and informal sector employment in urban areas of Bolivia. *Labour Economics*, 2, 275–97.

Todaro, M., & Harris, J. (1970). Migration, Unemployment, and Development: A Two Sector Analysis. *The American Economic Review*, *60*(1), 126–142.