Participation of Women in the Economic Activity in Cameroon

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Abstract

The aim of this paper is to put forward the explanatory factors of the participation of women in the economic activity in the Cameroonian context characterized by an important and persistent gender gap in terms of participation in the economic activity (more men than women). The authors carried out, on the basis of data resulting from the DHS-MICS 2011, an analysis using the binomial logistic model. It comes out from this analysis that the significant explanatory variables are the age (which plays at the same time the role of variable of control), the religion, the ethnic group, the size of the household, the relationship with the head of household, the educational level (of the woman and the husband/partner), the occupational status of the husband/partner, the household's standard of living, and the marital status. According to the results obtained, it would be important to set up policies intended to reinforce the professionalization of the young woman and to fight against the sexist sociocultural norms and practices advocating the "sexual division" of labor.

Keywords

Economic activity, women, gender, development, logistic model

The economic, social, and political development of a country cannot be made without the effective participation of all the strata of society in particular women, whose demographic weight is not the least (Lopez-Claros and Zahidi 2005). Indeed, the rise of the female economic activity does not improve only the situation of the women, but also that of the society as a whole by stimulating the economic growth, by balancing the retirement system and by reducing the families' risk of poverty (Letablier et al. 2009; Galor and Weil 1996; Desvaux, Devillard, and Baumgarten 2007). The participation of the women in the economic activity thus constitutes a powerful factor of improvement of the economic performances of a country (Klasen 1999; Pissarides 2006). These facts thus call into question the traditional model of the man provider and the woman devoted to the domestic businesses, i.e., a system

characterized by the association of the active and productive pole to the men and of the passive and reproductive axis to the women. Besides, this justifies the fifth Objectives of the Durable Development (ODD). Thus, the question of the importance of the female human capital for the economic development challenges the industrialized economies as well as developing ones and thus, *a fortiori* the countries of Sub-Saharan Africa among which Cameroon, space chosen for our study.

According to data provided by the World Bank (World Bank 2012), within the Cameroonian female population aged 15 years old and more, the

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participation rate in the economic activity knew only a very weak rise during the two last decades. Indeed, it passed from 55.3% in 1990 to approximately 64% in 2010, that is to say, a rise of 8.6 percentage points. One observes moreover over the same period, a relatively weak rise of the female/male ratio in the rate of participation in the economic activity (going from 69.4% in 1990 to 82.7% in 2010, that is to say, a rise of approximately 13.3 percentage points). This difference between men and women is also observed in the report of *ECAM 3*. In addition, according to data coming from DHS-MICS (Demographic and Health Survey-Multiple Indicators Clusters Survey) realized in Cameroon in 2011, the occupation rate¹ is 68.1% among women whereas it is 87.2% among the men, that is to say, a significant gap of 19.1 percentage points. Thus, in terms of probability, the men have 28% more chances than the women to carry on an economic activity. Let us note in addition that this gap increased by 2004 to 2011 in the sense that in 2004, it was about 18%. This “insufficient” participation of the women constitutes a proof of an underutilization of the economic potential in terms of human resources or of human capital that Cameroon could fully draw in order to accelerate its accession process to the status of emergent country. Hence, the interrogation that these empirical observations bring about is as follows: Why is this “timid” evolution of the participation of the female strata in the economic activity in Cameroun? This central question and the considerations mentioned above constitute the cogency of the authors’ study. In this paper, they propose:

(1) To analyze the impact of the economic, sociodemographic, and sociocultural variables on the participation of women in the economic activity in the Cameroonian context;

(2) To determine the mechanisms of actions of the explanatory variables on the female participation in the economic activity in the Cameroonian context.

LITERATURE REVIEW

The Neoclassical Theory

According to the neoclassical theory, based on the assumption of the rational economic agent (*homo oeconomicus*), the labor market is based mainly on the economic motivation of the actors, i.e., on the research of the maximum satisfaction. If the employers seek an effective production at the lower cost, the workers, as for them, invest in education, training, and information with an aim of obtaining the best wages in the best working conditions.

According to Mincer (1962), the individual time allocation between work and leisure is a function of the wages. A rise in the labor remuneration has two effects: the income effect and the price effect or substitution effect.

The economic agent decides to work only if the income it obtains from this work is higher than the out-of-activity income; this income coming from work depends upon age and human capital (health and education). This aspect finds all its relevance more especially as if the wages of the spouse (of which one of the factors is the employment status) are high so that the woman’s “reserve” wages are higher than that she would have obtained in the event of labor force participation, then she would not choose to work.

The Survival Strategies Theory

In order to analyze the links between poverty and labor market, it is advisable to apprehend each individual labor offer not like an isolated decision made according to its own characteristics but like dependent on the strategy of a broader group: household. According to the classical theory of the family economy (Becker 1981), each household maximizes her utility by allocating the total time available of each one of its members between commercial work and the production of the domestic goods. This allocation takes into consideration the

heterogeneity of the roles and functions of the various household members. This distribution of roles which corresponds to the beckerian optimum must rather be perceived like a reference state, likely to vary according to the constraints and shocks to which the household faces.

The Education Level

The human capital endowment constitutes the principal determinant of salary, which is itself the principal determinant of the labor force participation. The individuals invest in themselves to profit from future monetary and nonmonetary outputs (Becker 1993). The human capital theory rejects the standard approach's homogeneity assumption of the labor as input by regarding the levels of qualification of the individuals as source of heterogeneity. Accordingly, Mincer (1974) derived an econometric model of profits in which the years of studies and the years of work respectively give an account of the accumulated human capital in initial formation and of the experiment of the individual. Kozel and Alderman (1990), Garcia (1995), Caputo (1997), Aly and Quisi (1996), Azid, Aslam, and Chaudary (2001), Hafeez and Ahmad (2002), and Naqvi and Shahnaz (2002) showed that the level of education has a positive and significant impact on the participation in the economic activity. In Nigeria, Aminu (2010) used the probit and multinomial methods by taking as a starting point the Mincerian model of the human capital. The analyses carried out on each of the two data bases of which it makes use reveal the positive influence of the educational level. Aromolaran (2004), in an empirical study carried out, always in Nigeria, shows that the participation of the women in the economic activity is positively influenced not only by their educational level, but also that of husband or partner (for the women living in union). This relation is confirmed by a study carried out in Ghana by Sackey (2005).

Socio-Cultural Norms

They pose the male domination as historical postulate. The inequalities which exist between the women and men in the labor market are only cases of discrimination resulting from the subordinate position of the woman in the society, position historically and culturally built (Locoh, Labourie-Racape, and Tichit 1996). The consequences of this subordination and the sexual division of the work which results from this make the women assume only the domestic work of production (children rearing, household production, etc.), have less time to take part in other types of activities, in fact economic (Hartmann 1976; Sacks 1979; Dussault 1987). Chamlou, Muzi, and Ahmed (2011) noted, in a study undertaken in the countries of the Middle-East and North Africa (MENA), a high level of education in this area, accompanied however by a relatively weak female participation in paid work, which leads them to analyze the role of the social norms in the participation of women in the economic activity. The results they obtain show that the rate of female participation of the migrants in paid work reflects on the whole that their countries of origin and that the traditional social norms constitute an obstacle to this participation.

Farre and Vella (2007) were further showing that the conservative attitude of the woman significantly influences the perception of her children regarding the participation of the woman in the economic activity, influencing significantly the decision of her daughters and daughters-in-law to fit on the labor market. Fernandez, Fogli, and Olivetti (2004) fell under the same order of idea by specifying that having a husband whose mother works or worked, increases significantly the probability for a married woman to work full-time and this, beyond the considerations of the other variables.

According to Fraser (1990), there is possible interdependence between conservative social norms and female labor; hence there is an eventual problem

of endogeneity. This idea is shared by Seguino (2007) with the only difference that for the latter, the work of the woman has also an influence on the attitudes of the latter, but with certain shift in time.

Marital Status

Several authors such as Naqvi and Shahnaz (2002) and Chaudhry and Nasheen (2009) established a relationship between participation of the woman in the economic activity and marital status. But regarding the various results of the empirical studies, we can say that the marital status presents an ambivalent effect. Indeed, for Longwe, Smits, and Jong (2013) and Angrist (2001), the married women have less chances than the single, divorced, separated, and the widowed ones to fit on the labor market. They thus join Benefo and Pillai (2003), Ntuli and Wittenberg (2013), Shaheen, Maqbool, and Masood (2011) and Contreras and Plaza (2010).

Naqvi and Shahnaz (2002) obtained opposite results to those mentioned above, with the only difference that they restrict their sample to the unmarried women and those in union. According to these authors indeed, women in union have more chance to fit on the labor market than those who are unmarried.

Fadayomi and Ogunrinola (2014) as for them, carried out a thorough analysis by showing that divorced and the separate ones fit more easily on the labor market than the married women who, fit more easily than the unmarried women.

Number of Children

Azid et al. (2001) and Naqvi and Shahnaz (2002) showed that the number of children has a positive influence on the participation of the women in the economic activity. This result is conform to the model of the survival strategy mentioned above. But it is not shared by authors like Chaudhry and Nasheen (2009), Contreras and Plaza (2010), Naqvi and Shahnaz (2002), Contreras, Puentes, and Bravo (2005), Garcia

(1995) and Caputo (1997). These authors show that the participation of the women in the economic activity is influenced negatively and significantly by the number of children. One can however note that these authors do not mention the children age; this constitutes certainly the source of the divergence between these results insofar as the more the children grow, the higher the financial expenses are, which encourages the woman to be invested on the labor market, or to increase her work offer for an additional income. *A contrario seu*, the younger the child is, the more the woman is forced to reduce, or even suspend her work to take care of the latter.

Longwe et al. carried out into 2013 empirical work consisting in analyzing the effect of the parity and spacing between the last two (2) children on the insertion of the woman on the nonagricultural labor market in Africa. The data they exploit relate to more than 200,000 women having at least a child in a sample made up of 26 African countries. After having dealt with problem of endogeneity between fertility and the participation of the women with the economic activity, they show that the latter is negatively correlated with the number of recent births (children of less than five years) and positively correlated with the spacing of the recent births. By analyzing the interactions, they show that these effects are more significant among women having a higher educational level and those living in urban zone. In addition, these effects become weak with family planning.

Age

Many authors agree with the fact that the woman's age positively influences her participation in the economic activity. We can quote for example Azid et al. (2001), Naqvi and Shahnaz (2002), Aminu (2010), Faridi, Chaudhry, and Anwar (2009), Garcia (1995) and Caputo (1997). Contreras and Plaza (2010) were further showing that this positive effect decreases with the age (concavity). Fadayomi and Ogunrinola (2014) went in the same direction by showing as the probability

Figure 1. The Analysis Scheme.

Note: Source: The authors.

for a woman to obtain a paid employment increases with the age, up to 64 years old. For Contreras et al. (2005), the effect of the age follows a concave evolution and reaches the maximum effect at 36 years. Indeed, the younger the troop is, the more the chance of participating in the economic activity increases.

The synthesis of all the analyses presented above permitted us to elaborate the analysis diagram depicted in Figure 1.

METHODOLOGY

Sample and Source of Data

The data used are those of DHS-MICS 2011 which made it possible to collect data such as socio-economic, demographic, and sociocultural data of the women between 15 and 49 years old as well as the data relating to housing. These data were collected on 14,214 households and 15,246 women.

Evaluation of the Data Quality: Births of the Five Years Preceding the Survey

Graphic evaluation. The curve presented in Figure 2 has a normal shape; this could lead us to think that the quality of data on births of the five years preceding the survey is good. But to confirm it, it could be important to complete this graphic evaluation by a statistical one. We choose for this purpose the method of Brass and Rachad.

Statistical evaluation: Brass & Rachad method. According to the method of Brass and Rachad (See *Handbook X* of United Nations 1984), if $Min(A, B)$ is higher than the parity observed corresponding to the old women of 45 to 49 years old (P_7), then there are under declaration (or omission) of births. The values of A and B are given by the following formulas:

$$\begin{cases} A = \frac{(P_3)^2}{P_2} \\ B = P_2 * \left(\frac{P_4}{P_3}\right)^4 \end{cases}$$

A and B can be obtained by using the estimated parities using the method of Brass (see Appendix 1).

$$\begin{cases} A = \frac{(F_3)^2}{F_2} \\ B = F_2 * \left(\frac{F_4}{F_3}\right)^4 \end{cases}$$

Calculations carried out reveal that $Min(A, B) = 4,855,199 < F_7 = 5,063,114$ (see Appendix 1). The data are thus of good quality.

Variables

The dependent variable. The aim of our study is to determine the factors which are likely to influence the participation of the women in the economic activity, our dependent variable is the exercise of the economic activity during the 12 months preceding the survey. It is a dichotomic variable whose values are:

$$Y = \begin{cases} 1 & \text{if the woman has exerted an economic activity during the last 12 months} \\ 0 & \text{if not} \end{cases}$$

The independent variables. The independent variables are presented variables and their modalities are presented in Table 1.

The Binomial Logistic Model

Why is the binomial logistic model suitable for our analysis? Let us consider the following model:

$$Y = \alpha + \sum_{i=1}^n \beta_i * X_i + \mu_i$$

This equation can also be rewritten as follows:

$$Y = \beta * X + \mu_i$$

Where

$$\beta = (\alpha, \beta_1, \beta_2, \dots, \beta_i, \dots, \beta_n)$$

et

$$X = {}^t(1, X_1, X_2, \dots, X_i, \dots, X_n)$$

with:

$$\begin{cases} \alpha = \text{scalar representing the constant term} \\ \beta_i = \text{multiplicative parameter of the } i^{th} \text{ independant variable} \\ \mu_i = \text{error term} \end{cases}$$

Table 1. Independent Variables

Variables	Modalities
Place of residence	Large city; Small city; Rural
Religion	Catholic; Protestant; Muslim; Animist; Other Christian; No religion
Ethnicity	Arab-Choa/Peulh/Haoussa/Kanuri; Biu-Mandara; Adamaoua-Oubangui; Bantoïde Sud-Ouest; Grassfields; Bamiléké; Côtier/Ngoe/Oroko; Beti/Bassa/Mbam; Kaka/Maka/Pygmée
Educational level	No education; Primary; Secondary; Higher
Husband/Partner's educational level	No education; Primary; Secondary; Higher
Type of husband/partner's occupation	Not working; Manag./tech.; Clerical; Sales; Domestic; Services; Skilled manual; Unskilled manual; Agriculture
Household size	
Number of children under 5 years old (De jure)	
Marital status	Single; In union; Widowed; Divorced/Separated
Sex of household head	Male; Female
Relationship with the household head	Head; Wife; Daughter; Daughter-in-law; Granddaughter; Mother/Mother-in-law/Sister; Other relationship; Adoptive daughter; Not related; Niece
Standard of living	Lowest; Low; Medium; High; Highest
Number of births of the 5 years preceding the survey	
Ages group	Quinquennial ages groups

Note: The respective rates of non-response of the variables mentioned above are all lower than 10%, conventional level retained by the United Nations.

Figure 2. The Evolution of the Fertility Rate of by Age Group for the Five Last Years.

Note: Source: Exploitation of DHS-MICS Data (2011).

Let us consider the following model: $\hat{Y} = \hat{\beta} * X$

If $\hat{Y}$ is a dichotomic variable taking values 0 et 1, then we will have:

$$\text{For } \hat{Y} = 1: \hat{\mu} = 1 - \hat{\beta} * X$$

$$\text{For } \hat{Y} = 0: \hat{\mu} = \hat{\beta} * X$$

Because Y takes only two values, the error term can also take only two values. The checking of one of the assumptions thus poses problem; that is the assumption of homoscedasticity. Indeed, the variance of these errors depends on X . It is thus not constant.

The linear model (term of right-hand side) can lead to values apart from those of the interval and that even though the values of X are reasonable. This supposes that we estimate parameters which do not exist. A way of regulating this problem is to find functions which avoid falling apart from the interval (0, 1). The logit model is one of these functions.

Presentation of the binomial logistic model.

Let $Prob(Y = 1)$ and $Prob(Y = 0)$ be the respective probabilities that Y equals respectively 1 and 0.

$$Prob(Y = 1) = \frac{e^{\beta * X}}{1 + e^{\beta * X}} = F(\beta * X)$$

$$Prob(Y = 0) = 1 - F(\beta * X)$$

Where, F represents the cumulative distribution logistic function.

$$E[Y/X] = 0[1 - F(\beta * X)] + 1[F(\beta * X)] = [F(\beta * X)]$$

By setting $z = \beta * X$, we obtain:

$$Prob(Y = 1) = \frac{e^z}{1 + e^z} = \Pi_i$$

$$\Rightarrow \text{Log}\left(\frac{\Pi_i}{1 - \Pi_i}\right) = \beta * X$$

$$\Rightarrow \text{logit}(\Pi_i) = \beta * X$$

Let us also set:

$$\Pi_1 = Prob(Y = 1|x_i = 1) = \frac{e^{\alpha + \beta_i}}{1 + e^{\alpha + \beta_i}}$$

$$1 - \Pi_1 = Prob(Y = 0|x_i = 1) = \frac{1}{1 + e^{\alpha + \beta_i}}$$

$$\Pi_0 = Prob(Y = 1|x_i = 0) = \frac{e^{\alpha}}{1 + e^{\alpha}}$$

$$1 - \Pi_0 = Prob(Y = 0|x_i = 0) = \frac{1}{1 + e^{\alpha}}$$

We thus obtain the following expression:

$$OR = \frac{\left(\frac{\Pi_1}{1 - \Pi_1}\right)}{\left(\frac{\Pi_0}{1 - \Pi_0}\right)} = e^{\beta_i}$$

OR = odds ratio or ratio of chances. An $OR > 1$ indicates that variable x_i has a positive effect on the probability of realization of the event “ $Y = 1$ ” (for our analysis, this event is the participation in an economic activity). *A contrario seu*, an $OR < 1$ means that variable x_i decreases the probability of realization of the event $Y = 1$.

The coefficients β_i are estimated by the method of the maximum likelihood. Taking into account the nonlinearity of the model, these parameters are estimated by iteration.

Generally, we have:

$$\frac{\delta \text{Log}(\text{odds ratio})}{\delta x_i} = \beta_i$$

β_i represents the Napierian logarithm of the odds-ratio associated with one unit increase of the explanatory variable x_i .

For the continuous explanatory variables, it is possible to calculate the variation of probability when the variable X_i grows by a unit. This variation can be calculated by using the following expression:

$$\frac{\delta \Pi_i}{\delta x_i} = \frac{\beta_i * e^{-z}}{[1 + e^{-z}]^2}$$

Softwares Use

The softwares chosen for our analysis are Stata/SE 12 and Spss-IBM 20 because of their complementarity. We use also Excel (Office 2010) for additional calculations, the generation of graphs and the elaboration of tables.

RESULTS

Results of the Tests of the Model's Robustness

The probability associated with the statistics of khi-square shows that the estimated model is overall significant at 1% level. The goodness of fit test shows us that the model is adjusted at 79.38% (see Table 2). This satisfactory adjustment quality is also shown at the end of the test of Hosmer-Lemeshow. The calculated value of the ROC (Receiver Operating Characteristic) is about .7635 (See Figure 3), which is satisfactory from the point of view of the degree of discrimination. We can consequently consider the results obtained from the estimates of our model parameters.

Results of the Estimation of the Model's Parameters

The results reveal that among the explanatory variables, the non-significant ones at the 5% level of signification are: sex of the head of household, number of children of less five (5) years living in the household, and the number of births of five (5) last years preceding the survey. The results also show that:

(1) The chances of the woman to carry on an economic activity increase with its age, but at a decreasing rate, which is up to our expectations;

(2) The women of primary educational level have 1.3 times more chances to participate in an economic activity than those of secondary level; the modalities "no education" and "higher" do not have a significant effect on the probability of participating in an economic activity;

(3) The Muslim women have .65 times less chances to carry on an economic activity than those of Catholic religion;

(4) The women of ethnic group Arab-Choa/Peulh/Houssa/Kanuri and those of the grassfields have respectively .45 times less chances and 2.11 times more chances to carry on an economic activity than those of Bamiléké/Bamoun group;

(5) The women living in the households made up

of 11 to 15 members have .82 times less chances to participate in an economic activity than those living in the households comprising 6 to 10 members;

(6) The women residing in the large/small cities have .6 times less chances to carry on an economic activity than those living in rural zone;

(7) The women who are heads of household have 1.71 times more chances to participate in economic activity than those which are wives of heads of household;

(8) The women of low or average standard of living have on average 1.6 times more chances to carry on an economic activity than those of high standard of living;

(9) The divorced/separated women have 1.5 times more chances to carry on an economic activity than those living in union;

(10) The women whose husband/partner has a primary educational level have .7 times less chances to participate in an economic activity than those whose husband/partner has a secondary level;

(11) The women whose husband/partner does not work have .46 times less chances to carry on an economic activity than those whose husband/partner is working in agricultural sector.

Hierarchical Organization of Variables

Table 3 emphasized the hierarchy of the explanatory variables according to their respective contribution to the explanation of the studied phenomenon.

Mechanisms of Action of the Independent Variables on Female Participation in Economic Activity (See Appendix 2)

The inclusion of the variable "Religion" (model M2) annuls the significance of the "south-western" modality of the Ethnicity variable at 10% level of signification. This is the proof that the ethnic group affects the participation of women in the economic activity via the religion. The inclusion of the variable "Educational level of the spouse" (model M4) annuls the significance

Figure 3. The ROC (receiver operating characteristic) curve.

Note: Source: Exploitation of DHS-MICS Data (2011).

Table 2. Classification Matrix

Classified	True		Total
	D	~D	
+	7,079	1,635	8,714
–	364	617	981
Total	7,443	2,252	9,695
Classified + if predicted $\Pr(D) \geq .5$			
True D defined as V731 $\neq 0$			
Sensitivity		$\Pr(+ D)$	95.11%
Specificity		$\Pr(- \sim D)$	27.40%
Positive predictive value		$\Pr(D +)$	81.24%
Negative predictive value		$\Pr(\sim D -)$	62.90%
False + rate for true ~D		$\Pr(+ \sim D)$	72.60%
False – rate for true D		$\Pr(- D)$	4.89%
False + rate for Classified +		$\Pr(\sim D +)$	18.76%
False – rate for Classified –		$\Pr(D -)$	37.10%
Correctly classified			79.38%

Note: Source: Exploitation of DHS-MICS Data (2011).

of the modality “Biu-Mandara” of the ethnicity and decreases that of the modality “11-15” of the household size. The educational level of the spouse thus constitutes a partial intermediate variable by which the ethnic group and the size of the household influence the participation of the woman in the economic activity. Furthermore, the type of occupation of the spouse constitutes, on the one hand, a variable

by which the educational level of the spouse acts, and on the other hand, an inhibiting variable of the ethnic group (model M5). Let us note in addition that the standard of living of the household is a partial inhibiting variable of the ethnos group and an intermediate variable of the educational level and type of occupation of the spouse (model M6). Moreover, the relationship with the head of household and the

Table 3. Contribution of Explanatory Variables

Variables	χ^2_i	χ^2_f	$(\chi^2_f - \chi^2_i) / \chi^2_f$	Contribution (%)	Rank
Ages group	1,282.20	1,639.47	.217918	21.7918	1
Place of residence	1,604.49	1,639.47	.021336	2.133616	5
Ethnicity	1,527.14	1,639.47	.068516	6.851604	2
Religion	1,596.09	1,639.47	.02646	2.645977	4
Household size	1,633.47	1,639.47	.00366	.365972	12
Husband/Partner's educational level	1,620.05	1,639.47	.011845	1.184529	9
Type of Husband/Partner's occupation	1,590.75	1,639.47	.029717	2.971692	3
Living standard	1,617.05	1,639.47	.013675	1.367515	8
Relationship with the household head	1,606.02	1,639.47	.020403	2.040294	6
Sex of household head	1,635.72	1,639.47	.002287	.228732	13
Numbers of children under 5 years old (De jure)	1,632.73	1,639.47	.004111	.411108	11
Marital status	1,629.41	1,639.47	.006136	.613613	10
Educational level	1,609.97	1,639.47	.017994	1.799362	7
Number of births of the 5 years preceding the survey	1,638.38	1,639.47	.000665	.066485	14

Note: Source: Exploitation of DHS-MICS Data (2011).

sex of the head of household are respectively partial inhibiting variables of occupation status of the spouse and religion (models M8 and M9). The inclusion of the variable "Numbers children of less than five (5) years" (model M10) reduces the significance of the "Protestant" modality of the religion. This last influences thus the participation of the woman in the economic activity via the number of children of less than five years old living in the household. The inclusion of the woman's educational level (model M11) shows that it is a partial intermediate variable of the ethnic group, religion, household size, woman's educational level and household's living standard. Finally, in the last model (model M12), one notices that the religion, the size of the household, and the sex of the head of household act via the marital status.

CONCLUSIONS

The principal aim of this paper was to determine the

explanatory factors of the participation of women in the Cameroonian context. To arrive there, the authors carried out a short review of the literature which leads them to the elaboration of an analysis diagram. They then examined the rates of non-response and the quality of the data on births of the five years preceding the DHS-MICS survey. The authors thereafter presented the model used for their analysis (binomial logistic model). It comes out from their analysis that the significant explanatory variables are the age group, which plays at the same time the role of control variable, the religion, the ethnos group, the size of the household, the relationship with the head of household, the educational level (of the woman and of the husband/partner), the husband/partner's occupational status, the household standard of living, and the marital status. According to the results obtained, it would be important to set up policies intended to reinforce the professionalization of the young woman and to fight against the sexist values that advocate the sexual division of labor.

Appendix

Appendix 1. Results of the Calculation of the Estimated Parity by the Brass's Method

i	Groups of age	Number of women	Births of five recent years	Average annual births	Fertility rate	Cumulation	a	b	c	Fi
1	15-19	3,590	990	198	55.1532	275.766	2.147	-.244	.0034	88.00754
2	20-24	3,118	3,052	610.4	195.7665	1,254.599	2.838	-.758	.0162	724.527
3	25-29	2,661	3,327	665.4	250.0564	2,504.88	2.76	-.594	.0133	1,875.559
4	30-34	1,908	2,202	440.4	230.8176	3,658.969	2.949	-.566	.0025	3,108.196
5	35-39	1,688	1,344	268.8	159.2417	4,455.177	3.029	-.823	.0006	4,060.396
6	40-44	1,274	650	130	102.0408	4,965.381	3.419	-.966	-.0001	4,720.086
7	45-49	1,187	167	33.4	28.13816	5,106.072	3.535	-.007	-.0002	5,063.114
	Total	15,426	11,732	2,346.4						

A = 4,855.199

B = 5,464.683

Note: Source: Exploitation of DHS-MICS Data (2011).

Appendix 2. Increasing Step Model

Variables and modalities	Gross effects	Net effects												
		M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Place of residence (ref = rural)		***	***	***	***	***	***	***	***	***	***	***	***	***
Largecity	.601***	.552***	.419***	.403***	.390***	.408***	.462***	.610***	.601***	.605***	.602***	.602***	.614***	.601***
Smallcity	.585***	.535***	.477***	.475***	.474***	.469***	.526***	.617***	.602***	.605***	.606***	.603***	.603***	.600***
Ethnicity (ref = bamiléké/bamoun)			***	***	***	***	***	***	***	***	***	***	***	***
Ar/peuhl	.304***		.246***	.351***	.349***	.412***	.422***	.417***	.420***	.418***	.417***	.417***	.449***	.445***
Biu-mand	.952(ns)		.730***	.758***	.766***	.857(ns)	.853(ns)	.806**	.804**	.860**	.792**	.789**	.826*	.817*
Adm-oub	1.197*		.888(ns)	.898(ns)	.912(ns)	.964(ns)	.937(ns)	.906(ns)	.893(ns)	.894(ns)	.887(ns)	.884(ns)	.885(ns)	.874(ns)
Sth-west	2.196***		1.768**	1.573(ns)	1.561(ns)	1.611(ns)	1.658*	1.670*	1.649*	1.665*	1.665*	1.666*	1.630(ns)	1.603(ns)
Grssfields	3.302***		2.606***	2.306***	2.255***	2.182***	2.186***	2.222***	2.213***	2.217***	2.189***	2.188***	2.113***	2.109***
Côtier/...	1.527***		1.249(ns)	1.098(ns)	1.099(ns)	1.139(ns)	1.126(ns)	1.152(ns)	1.162(ns)	1.160(ns)	1.149(ns)	1.153(ns)	1.152(ns)	1.145(ns)
Bti/bsa/mbm	1.028(ns)		1.004(ns)	.923(ns)	.949(ns)	.980(ns)	.993(ns)	1.006(ns)	.995(ns)	.997(ns)	.992(ns)	.991(ns)	.998(ns)	.995(ns)
Kka/mka/pygm	1.498**		1.417**	1.258(ns)	1.284(ns)	1.274(ns)	1.234(ns)	1.201(ns)	1.166(ns)	1.172(ns)	1.163(ns)	1.168(ns)	1.148(ns)	1.145(ns)
Religion (ref = Catholic)				***	***	***	***	***	***	***	***	***	***	***
Protestant	1.399***			1.191**	1.185**	1.163**	1.155**	1.147**	1.145*	1.149**	1.147**	1.145*	1.153**	1.144*
Muslim	.426***			.652***	.664***	.662***	.672***	.662***	.658***	.660***	.659***	.659***	.655***	.649***
Animist	1.425**			1.121(ns)	1.123(ns)	1.182(ns)	1.139(ns)	1.141(ns)	1.136(ns)	1.139(ns)	1.136(ns)	1.150(ns)	1.202(ns)	1.196(ns)
Other christian	1.389*			1.090(ns)	1.062(ns)	1.059(ns)	1.079(ns)	1.099(ns)	1.073(ns)	1.078(ns)	1.073(ns)	1.071(ns)	1.068(ns)	1.054(ns)
No religion	1.409*			.976(ns)	.999(ns)	1.017(ns)	1.013(ns)	.981(ns)	.974(ns)	.980(ns)	.979(ns)	.970(ns)	.975(ns)	.979(ns)
Household size (ref = 6-10)					**	*	*	*	*	*	*	*	[ns]	*
1-5	.916*				1.086(ns)	1.087(ns)	1.075(ns)	1.082(ns)	1.009(ns)	1.018(ns)	.995(ns)	.962(ns)	.962(ns)	.960(ns)
11-15	.754***				.803***	.810**	.819**	.827**	.843**	.827**	.830**	.820**	.814(ns)	.817**
16-20	.666***				.838(ns)	.852(ns)	.857(ns)	.880(ns)	.889(ns)	.865(ns)	.872(ns)	.787(ns)	.775(ns)	.769(ns)
21-43	.785(ns)				.793(ns)	.820(ns)	.808(ns)	.835(ns)	.862(ns)	.831(ns)	.837(ns)	.740(ns)	.728(ns)	.727(ns)

Appendix 2. (Continuation)

Variables and modalities	Gross effects	Net effects												
		M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Husband/partner's eductional level (ref = secondary)						***	***	***	***	***	***	***	***	***
No education	.684***					.743***	.669***	.644***	.640***	.641***	.638***	.638***	.706***	.702***
Primary	1.436***					1.206***	1.120(ns)	1.073(ns)	1.074(ns)	1.072(ns)	1.072(ns)	1.068(ns)	1.039(ns)	1.037(ns)
Higher	.759***					.744***	.792**	.837*	.829*	.831*	.828*	.827*	.899(ns)	.916(ns)
Type of husband/partner's (ref = agriculture)							***	***	***	***	***	***	***	***
Not working	.284***						.414***	.434***	.442***	.442***	.438***	.439***	.449***	.459***
Manag./tech.	.686***						.747**	.818(ns)	.794*	.796*	.795*	.793*	.807*	.806*
Clerical	.769*						.786(ns)	.848(ns)	.819(ns)	.828(ns)	.826(ns)	.825(ns)	.816(ns)	.810(ns)
Sales	.437***						.668***	.704***	.694***	.698***	.696***	.695***	.700***	.701***
Domestic	.481***						.534***	.550***	.545***	.548***	.544***	.545***	.535***	.537***
Services	.653***						.631***	.652***	.636***	.638***	.636***	.640***	.638***	.630***
Skilled manual	.666***						.802***	.830**	.830**	.833**	.831**	.832**	.829**	.832**
Unskilled manual	.508***						.515***	.517***	.518***	.523***	.521***	.519***	.510***	.513***
Standard of living (ref = highest)								***	***	***	***	***	***	***
Lowest	1.368***							1.517***	1.515***	1.531***	1.575***	1.582***	1.566***	1.561***
Low	2.015***							1.802***	1.772***	1.793***	1.836***	1.836***	1.759***	1.765***
Medium	1.462***							1.573***	1.563***	1.578***	1.605***	1.615***	1.513***	1.514***
High	1.115(ns)							1.188**	1.178**	1.191**	1.201**	1.204**	1.156*	1.161*

Appendix 2. (Continuation)

Variables and modalities	Gross effects	Net effects												
		M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Relationship with the household head (ref = wife)									***	***	***	***	***	***
Head	1.999***								1.489***	1.908***	1.886***	1.873***	1.873***	1.710***
Daughter	.599***								.936(ns)	1.047(ns)	1.010(ns)	1.003(ns)	1.001(ns)	.877(ns)
Daughter-in-law	.753**								.850(ns)	.949(ns)	.924(ns)	.919(ns)	.911(ns)	.891(ns)
Granddaughter	.584*								.992(ns)	1.100(ns)	1.054(ns)	1.068(ns)	1.099(ns)	.950(ns)
Mot/m-i-l/str	1.287(ns)								1.268(ns)	1.383*	1.343(ns)	1.344(ns)	1.328(ns)	1.131(ns)
Other relationship	.791*								1.223(ns)	1.314*	1.275(ns)	1.271(ns)	1.256(ns)	1.175(ns)
Adoptive daughter	.332***								.513(ns)	.570(ns)	.554(ns)	.546(ns)	.548(ns)	.505(ns)
Not related	1.274(ns)								1.600*	1.847**	1.777**	1.786**	1.789**	1.665*
Niece	.358***								.620*	.753(ns)	.720*	.720*	.732(ns)	.653**
Sex of household head (ref = male)										**	**	**	**	*
Female	1.286***									.773**	.775**	.780**	.790**	.800*
Number of births of the 5 years preceding the survey (ref = none)											(ns)	(ns)	(ns)	(ns)
1 birth	.752***										.946(ns)	.992(ns)	.994(ns)	.997(ns)
2 births	.728***										.887(ns)	.943(ns)	.940(ns)	.946(ns)
3-6 births	.674***										.834(ns)	.888(ns)	.878(ns)	.882(ns)

Appendix 2. (End)

Variables and modalities	Gross effects	Net effects													
		M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	
Number of children under 5 years old (de jure) [ref = 0 (< 5 years old)]												(ns)	(ns)	(ns)	
1 (< 5 years old)	.863**											1.005(ns)	1.008(ns)	1.012(ns)	
2 (< 5years old)	.762***											.885(ns)	.888(ns)	.893(ns)	
3 (< 5 years old)	.617***											.844(ns)	.849(ns)	.857(ns)	
4 (< 5 years old)	.720***											1.027(ns)	1.027(ns)	1.037(ns)	
5-19 (< 5 years old)	.699***											1.131(ns)	1.134(ns)	1.152(ns)	
Educational level (ref = secondary)														***	***
No education	.807***												.882(ns)	.882(ns)	
Primary	1.737***												1.317***	1.306***	
Higher	.867(ns)												.838(ns)	.836(ns)	
Marital status (ref = married/living with part.)															***
Widowed	2.508***													1.049(ns)	
Divorced/sep.	1.359***													1.469***	
Ages group (ref = 15-19)		***	***	***	***	***	***	***	***	***	***	***	***	***	
20-24	1.794***	1.919***	1.807***	1.780***	1.756***	1.789***	1.757***	1.771***	1.754***	1.766***	1.820***	1.818***	1.825***	1.801***	
25-29	3.092***	3.372***	3.041***	2.997***	2.979***	3.086***	2.971***	3.018***	2.904***	2.938***	3.038***	3.053***	3.104***	3.049***	
30-34	4.604***	5.042***	4.513***	4.419***	4.454***	4.690***	4.487***	4.617***	4.342***	4.409***	4.506***	4.513***	4.523***	4.418***	
35-39	5.822***	6.409***	5.931***	5.730***	5.844***	6.167***	5.982***	6.087***	5.586***	5.669***	5.645***	5.597***	5.613***	5.492***	
40-44	6.507***	7.014***	6.558***	6.390***	6.522***	6.933***	6.824***	6.987***	6.285***	6.391***	6.253***	6.210***	6.316***	6.189***	
45-49	8.248***	8.959***	7.633***	7.398***	7.515***	7.995***	7.751***	7.862***	6.972***	7.081***	6.821***	6.827***	6.859***	6.722***	
Prob > chi2		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

Note: (***) = 1%; (**) = 5%; (*) = 10%; ns = not significant.

Note

1. Proportion of labor force participation in working-age population (15-59 years old).

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