
Fertility and Other Determinants of Women's Employment in Cameroon

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Abstract: Maternity, pregnancy, childbirth, and the period after childbirth impose a substantial burden on women's health and time. This, in turn, can have a significant impact on women's ability to participate in the labour force. This work was aimed at investigating the effect of fertility and other determinants of women's employment in Cameroon. The expo-facto research design and pooled data from the 1991, 1998, 2004, 2011 and 2018 Cameroon DHS data set (50,131) was used. The Instrumental Variable Probit Model and Control Function were used to analyze the data. The result of the effect of fertility on women's employment in Cameroon was positive and statistically significant. Other determinants like Education, husband education, husband's occupation, marital status, region of origin, and lifetime sex partners also positive and statistically significant influence on women's employment in Cameroon. Woman's age, wealth levels, age at first birth, being a Muslim and year of data had a negative and statistically significant effect on a woman's likelihood to get employed. From the results, it was concluded that, fertility and other determinants statistically significant effect on women's in Cameroon. This study thus recommended the promulgation and subsidization of daycare services in Cameroon to increase the likelihood of women with children to seek employment. The work also recommends the promotion of women's education in Cameroon so as to facilitate women's access to employment.

Keywords: Fertility, Women, Employment, Cameroon

1. Introduction

Fertility rates steadily declined from the mid-1960s through to the turn of the century in the EU member states. However, at the beginning of the 2000s, the total fertility rate in the EU-27 displayed signs of rising again. This development stopped in 2010 and a subsequent decline was observed though to a relatively low rate in 2013, followed by a slight increase towards 2017. In 2018, the total fertility rate in the EU-27 was 1.55 live births per woman (as compared to 1.56 in 2017) [21]. The global total fertility rate up to 1965 per average woman in the world was more than 5 children. Since then it has seen an unprecedented change; the number has halved. Globally, the average per woman is now below 2.5 children [32]. The three major

reasons for the drop are the empowerment of women (increasing access to education and increasing labour market participation), declining child mortality, and a rising cost of bringing up children to which the decline of child labour contributed [29].

According to Esteban et al., maternity, pregnancy, childbirth, and the period after childbirth impose a substantial burden on women's health and time [20]. Even more importantly, research by Goldin and Katz showed that increasing women's watch over their reproductive choices contributes to altering their career and marriage choices by eliminating the risk of pregnancy and encouraging career investment [23].

While the correlation between female employment and fertility has been negative and significant for several years

across countries, it has become positive and weaker after mid 80s [12]. However, when only Southern European countries are considered, the correlation did not change sign. Due to these different characteristics, research focusing on the relationship between women's participation and fertility have developed mainly in Southern European countries, where reconciling work and fertility appears to still be a very difficult task. On the contrary, in Northern European countries, economic research has focused on the effects of children on women's wages and careers [11]. While a consistent negative relationship between women's paid work and fertility has been found at the micro level in developed countries [5]. Generally, the trend of fertility, health and female employment in Cameroon show that female employment has been on the rise as fertility fall and health status improves. This means that as fertility fall, female employment increases. As health increases, employment increases and as fertility falls, health improves.

2. Concept and Literature Review

Literature on fertility and female employment related to this work is numerous and varied. Some of the works postulate that fertility affects employment negatively while others agree on a positive relationship between the two. A second school of thought holds that fertility affects employment and not the other way round. Lastly, the third school of thought specifies a causal relationship between the two variables. Since the pioneer work by Mincer [30] and Cain [8], there have been numerous studies on female labour outcomes. Their studies showed that female as well as male employment depends on economic and demographic characteristics such as: female earnings, male earnings, non-earnings income, schooling, age and the number of children. The relationship between female labour force participation and fertility was studied based on the maternal role incompatibility hypothesis, which states that an inverse relationship occurs between women's work and fertility only when the roles of worker and mothers conflict.

In later years, Gauthier and Christophe pointed out that very complex mechanisms determined the decision for males' as well as their female counterparts to enter, stay on, or leave the labour market amongst others [22]. These mechanisms included economic (the labour market structure), individual (skills, marital status, labour force attachment, incentives, career expectations about), and household characteristics (structure, domestic workload, presence and number of children). Some other studies documented strong ties between women's work patterns and changes in their family status [22]. Their results were based on the evidence that, women who work for pay, have fewer children (on average) than women who do not, and that mothers spend less time in paid employment (on average) than childless women.

Bernhardt reviewed the empirical evidence on the relationship between fertility and women's employment [6].

According to him, though in industrialized societies there is generally a negative relationship between the two, but the causal direction is far from clear. In a study on Morocco, Aynaoui found out that, house chores and childcare/eldercare are traditionally female duties that may prevent them from participating in the labour market [4]. The presence of children can negatively affect women labour force participation. Ahn and Cemfi also worked on the changing relationship between fertility and female employment rate in developing countries [1]. The Total Fertility Rate (TFR) was falling and female participation rate was increasing from 1970 to 1980 indicating a negative relationship. Daniela *et al.*, analyze a model of labour supply and fertility, using data from the ECHP (European Community Household Panel) for the period 1994-2000 [12]. Their findings showed that there existed a negative relationship between participation and fertility in these countries.

Daniela *et al.* said the persistence of a negative relationship between participation and fertility in these countries implies that it is important to consider fertility [12]. Kim and Arnstein wrote on Fertility and its Consequence on Family Labour Supply and income [26]. According to them, even if the burden of child care falls mainly on women, an exogenous increase in fertility is likely to change the optimal allocation of time. Beguy worked on the reversed relationship in Dakar (Senegal) and Lomé (Togo) [5]. Their paper investigated the impact of female employment on fertility in two urban contexts in sub-Saharan Africa: Dakar (Senegal) and Lomé (Togo). They found out that greater involvement of women in the labour force was not the main reason for fertility decline in Dakar. Tsafack and Zamo-Akono also reported the empirical relationship between fertility and health on female labour market outcomes [31]. The work of Tsafack and Zamo-Akono like ours sets out to investigate the similar general objectives. However, while their study dates back to 2010, ours is ten years after, thus the possibility for a different result. More so, they used secondary data for Yaoundé and Douala only while we used pooled secondary data set for the whole of Cameroon in 5 time periods.

Jacquemet and Robin proposed a search-matching model of the marriage market and so does Jacquemet and Robin to allow for labour supply [25]. They found out that leisure is an inferior good for men and a normal good for women. Kuepie *et al.* measured the impact of human capital and the fertility burden on labour market inequalities between men and women, in particular as regards access to the most highly paid jobs [28]. Their study covered Cameroon, Mali and Senegal, three countries in sub-Saharan Africa with similar socio-economic characteristics. Their findings showed that, even with the same level of education as men, women still stand less of a chance of getting into the top job segment, because education is less efficient for them.

Emara analyzed the effect of female employment on fertility rate [19]. she concluded that the increase in female labour force participation rate had a negative impact on fertility and that this negative effect is decreasing over time.

Cazzola et al. worked on the relationship between unemployment and fertility in Italy using a time-series analysis [9]. The results showed that both male and female unemployment rates were negatively associated with fertility in the northern and central regions of Italy. Alberto et al. evaluated whether the recent changes in male and female unemployment are differently linked to fertility in different geographic areas of Italy [3]. Unemployment rates seemed to be good predictors of fertility in these regions, although male unemployment appears to further reduce fertility beyond the reduction predicted by female unemployment.

To Klasen et al., overall, the economic, social and institutional constraints that shape women's labour force participation remain largely country-specific [27]. Nonetheless, rising education levels and declining fertility consistently increased participation rates, while rising household incomes contributed negatively in relatively poor countries, suggesting that a substantial share of women work out of economic necessity.

3. Methodology

This work uses secondary data. The secondary data was gotten from all available Demographic Health Survey (DHS) data for Cameroon. The available data sets for DHS Cameroon are: DHSVII (2018), DHSVI (2011), DHSIV (2004), DHSIII (1998) and DHS II (1991) [14-18]. To explore the effects of fertility on women's employment, we used both the IV probit and control function model. To avoid repetition, this section specifies only the control function model while IV probit model which equally adopts both models. This work uses the control function model because of the endogeneity of the two variables. Women's employment is used as a dependent variable while fertility is the independent variable in the regression. The study equation for fertility and women's employment is specified as follows:

$$WE = S_1\delta_F + \Theta_1F + \varepsilon_1 \quad (1)$$

$$F = S_2\delta_F + \Theta_2WE + \varepsilon_2 \quad (2)$$

Where: WE stands for women's employment defined as an outcome variable and F is fertility. It is an endogenous explanatory variable in the fertility choice function. It is measured by woman being employed or not. F stands for fertility defined as an endogenous explanatory variable in the women's employment function. It is captured by the total number of children ever born alive by a woman. S_1 is a vector of exogenous variables that determine women's employment (WE). S_2 is a vector of exogenous variables that determine fertility (F). It is worthy to note that, δ and Θ are parameters to be estimated while ε_1 and ε_2 are the two structural error terms.

Given that fertility (F) is determined simultaneously with women's employment (WE), it is correlated with ε_1 , which leads to bias and inconsistency in OLS estimates. For a

similar reason, women's employment (WE) is correlated with the error term (ε_2). Given that the interest here is to estimate women's employment (equation 3.1), if the right-hand side of equation 3.1 is plugged in for women's employment (WE) in equation 3.2, one gets:

$$F = S_2\delta_F + \Theta_2(S_1\delta_{WE} + \Theta_1F + \varepsilon_1) + \varepsilon_2 \quad (3)$$

To solve for fertility (F), the assumption must be made that $\Theta_2 \Theta_1 \neq 1$ to yield to equations 3.4 and 3.5.

$$(1 - \Theta_2 \Theta_1)F = \Theta_2 S_1 \delta_{WE} + S_2 \delta_F + \Theta_2 \varepsilon_1 + \varepsilon_2 \quad (4)$$

$$F = S_1 Z_{WE} + S_2 Z_F + \varepsilon_2 \quad (5)$$

where $Z_{WE} = \frac{\Theta_2 \delta_{WE}}{1 - \Theta_2 \Theta_1}$ and $Z_F = \frac{\delta_F}{1 - \Theta_2 \Theta_1}$ as well as $\varepsilon_3 = \frac{\Theta_2 \varepsilon_1}{1 - \Theta_2 \Theta_1}$.

Equation 3.5, which expresses F in terms of the vectors of exogenous variables S_1 and S_2 , and the error terms, is the reduced form equation for fertility (F). The vector of parameters Z_{WE} and Z_F are reduced form parameters. These reduced form parameters are nonlinear functions of the structural parameters in equations 3.1 and 3.2. The reduced form error, ε is a linear function of the structural error terms, ε_1 and ε_2 . Since ε_1 and ε_2 are each uncorrelated with S_1 and S_2 , ε is also uncorrelated with S_1 and S_2 . Thus, the vectors of parameters Z_{WE} and Z_F can be consistently estimated by the OLS.

Instrument

It is worthy to note that; this work focuses on the effect of fertility on women's employment. This implies that, estimation of the parameters of the women's employment function requires knowledge of inputs into the process. Given that inputs and outputs are jointly determined, there is a problem of simultaneity bias (that is, an endogeneity problem). An orthodox strategy to reduce the problem of endogeneity is to use intuition and the instrumental variables (IV) method. In this regard, potential instruments for fertility are needed in order to consistently estimate effects of fertility on women's employment. The instruments for fertility are those factors that affect fertility choices without directly having an effect on women's employment. In this work use is made of the use of contraceptive. The use of contraceptive is related with the total number of children. However, the use of contraceptive has no direct effect on the employment of a woman. This makes the use of contraceptive a suitable instrument for fertility. We applied the control function approach to address these potential issues. Thus, to account for potential endogeneity, heterogeneity of responses of unobservable that are complementing with or substituting for fertility and sample selection, equation 3.1 is augmented to equation 3.6, which is a control function model.

$$WE = \beta_0 + S_1\delta + \Theta_1F + \beta_1 \hat{\varepsilon}_3 + \Phi(\hat{\varepsilon}_3 F) + U \quad (6)$$

Where $\hat{\varepsilon}_3$ is the predicted residual of fertility (F), derived from the reduced form model of fertility (equation 3.5); $(\hat{\varepsilon}_3 F)$ is interaction of fertility with its residual and U is the error term of the estimating equation; and δ , θ , β

and Φ are parameters to be estimated. $\hat{\epsilon}_3$ and $\hat{\epsilon}_3$, F are control function variables. The predicted error term ($\hat{\epsilon}_3$), serves as a control for unobservable variables that are correlated with fertility (F). Hence, allowing this endogenous input to be treated as if it were an exogenous covariate during estimation. The interaction term ($\hat{\epsilon}_3F$),

controls for the effect of neglected non-linear interaction of unobservable variables with the input into women’s employment.

Applying this model to our work, our model can be specified as:

Step one:

$$Fer = \beta_0 + \beta_1f \text{ contraceptive use} + \beta_2Ed + \beta_3Res + \beta_4A + B5HE + \beta_6R + \beta_7MS + \beta_8AFC + \beta_9Yr + \mu \quad (7)$$

In step two, this residual is therefore used as the independent variable (fertility) and ran against women employment to solve the endogenous problem present in this equation.

Step two

$$WE = \beta_0 + \beta_1residual + \beta_2Ed + \beta_3Res + \beta_4A + B5HE + \beta_6R + \beta_7MS + \beta_8AFC + \beta_9Yr + \mu. \quad (8)$$

Table 1. Variables description and measurement of the fertility and Women’s employment equation.

Variable	Meaning	Description	Expected sign
WE	women’s employment	Working=1 Not working=0	
Fe	Fertility	Number of children born alive over a woman’s lifetime 0-18 Average number of children	-/+
ED	Education	Levels of education 0 No education 1 Primary 2 Secondary 3 Tertiary	+
RES	Residence	1 urban 2 rural	+/-
W	Wage	Wealth index 1 Poorest	+
		2 Poorer	
		3 Middle	
		4 Richer	
		5 Richest	
A	Age	Age in years	-/+
HE	Husband’s education	Levels of education 0 No education 1 Primary 2 Secondary 3 Tertiary	+/-
		1 Catholic	
		2 Protestant	
		3 other Christians	
Rel	Religion	4 Muslim	-/+
		5 Animist	
		7 None	
		1 Never married	
		2 Currently in union	
MS	Marital Status	3 Formally in a union	-
		Levels of education 0 No education 1 Primary 2 Secondary 3 Tertiary	
		HE Husband’s education	
AFC	Age at first cohabitation	Age in years 15-49	-
Yr	Year	1991, 1998, 2004, 2011 and 2018	+
μ	Error term		

Source: Computed by author.

4. Results and Discussion

This work is out to investigate the effect of fertility and other determinants on women’s employment in Cameroon. The reduce form equation is presented on table 2.

Table 2. Reduce for results for the fertility equation.

Variables	Dependent variable (Fertility)	Reduce form control function ((Standard Error))
	Knowledge on ovulation	0.0001241 (0.0241334)
	Contraceptive use	0.5131831*** (0.0725375)
Education	Primary	-0.09196 (0.1105104)
	Secondary	-0.2859384** (0.125379)
	Tertiary	-0.582156*** (0.1952569)
	Base group (No education)	
Residence	Urban	0.2829476*** (0.100801)
	Based group (Rural)	
	Poorer	-0.1829983 (0.1169872)
Wealth	Middle	-0.3839147*** (0.1383024)
	Richer	-0.4652166*** (0.1607777)
	Richest	-0.9821212*** (0.175247)
	Base group (Poorest)	
Age		0.2178792*** (0.005076)
	Primary	-0.1143575 (0.1177685)
	Secondary	-0.1168621 (.1292799)
	Tertiary	0.0433523 (0.1580716)
Husband's education	Base group (No education)	
	Protestant	-0.0585174 (0.0856836)
	other Christians	0.0599919 (0.13267)
	Muslim	0.1788036* (0.1013747)
	Animist	-0.6294872*** (.2348258)
	None	-0.5436894** (0.2639499)
Religion	Base group (Catholic)	
	Married	Omitted
	Base group (never married)	
Marital status		Omitted
Year	2018 and 2011 Base group (1991, 1998, 2004)	Omitted
Constant		-0.4778659 (0.367061)
Number of observations		2,831
Prob> F =		0.0000

Knowledge on ovulation and contraceptive use are used as instruments for the study. Results show that knowledge on ovulation (0.0001241) positively but insignificantly influence women's fertility. The use of contraceptive (0.5131831) positively and significantly influences women's fertility in Cameroon thus making it a better instrument for fertility in Cameroon. The level of education, wealth level, husband's education and some religion all negatively and statistically influences women's fertility while residence and age positively and statistically influences women's fertility in Cameroon.

This work is further validated using two tests as presented on Table 3. Column 1 presents the IV probit with endogenous regression results. Column 2 presents the control function result, a two step regression which uses an instrumental variable in the first step to get a residual. This residual is then used as the endogenous variable in the second step to solve the problem of endogeneity detected in this model. Both tools are valid for analyzing models with dummy dependent variables, missing variables and endogeneity problem (that is fertility affects women's employment and women's employment in turn, affects fertility) are used in this work to compliment the

short comings of each other. That is, only results for variables which are not significant for both models are rejected. This implies that only results that are significant for at least one of the models are considered significant in this work.

The IV Probit result has a positive (0.3743727) coefficient. This implies that, the livelihood that a woman is working increases with the number of children she has. Increase in the number of children by 100% increases the likelihood of the women working by 37.4%. The result of the control function (0.373787) is similar to that of the IV probit. Both results are statistically significant at 1%. This implies that contrary to the expectations that having children might disturb women from being actively involved in the labour market; this finding confirms that of Tsafack and Zamo-Akono who concluded that fertility has a positive impact on the probability of women's labour force participation [31]. This can be justified by the fact that having many children has proven to place additional financial burden on the woman in particular and their family as a whole thus forcing the woman to work in order to gain extra income to provide for their children.

Table 3. IV Probit and Control function results for the effect of fertility on women's employment in Cameroon.

Variables Dependent variable (women's employment)		IV Probit Two-step probit with endogenous regressors ((Standard Error))	Control function ((Standard Error))
Fertility		0.3743727*** (0.0604436)	0.373787*** (0.0663853)
Education	Primary	0.3596741*** (0.0393763)	0.3777463*** (0.0488336)
	Secondary	0.3736623*** (0.0513039)	0.3878923*** (0.0582921)
	Tertiary	0.538828*** (0.0859508)	0.5555021*** (0.0894251)
Residence	Base group (No education)		
	Urban	0.0493851 (0.036912)	0.0620292 (0.0387579)
	Based group (Rural)		
Wealth	Poorer	-0.1279485*** (0.0413108)	-0.1735765*** (0.0503114)
	Middle	-0.247079*** (0.0485256)	-0.2829569*** (0.0563851)
	Richer	-0.2345273*** (0.0590613)	-0.2348773*** (0.0668126)
Age	Richest	-0.1874587 (0.0694769)	-0.1670118** (0.0776095)
	Base group (Poorest)		
Husband's education	Primary	-0.0407256*** (0.0125489)	-0.0367902*** (0.0136414)
	Secondary	0.2696218*** (0.0397231)	0.2205867*** (0.0487614)
	Tertiary	0.3012909*** (0.0434552)	0.2286017*** (0.0521675)
Religion	Base group (No education)		
	Protestant	0.3003468*** (0.0520267)	0.2311317*** (0.0619796)
	other Christians	-0.0176316 (0.0294842)	-0.0312067 (0.0303281)
	Muslim	-0.3099415*** (0.0374145)	-0.0873191* (0.0470142)
	Animist	-0.4628571*** (0.0431856)	-0.5701759*** (0.045308)
Marital status	None	-0.0636729 (0.0856593)	-0.149454* (0.0865237)
	Base group (Catholic)	-0.249509*** (0.0799744)	-0.2826354*** (0.0907483)
	Married	0.4334813*** (0.0699235)	0.4100364*** (0.0787102)
Year	Base group (never married)		
Age at first cohabitation		0.0518738 *** (0.0093717)	0.048425*** (0.0100686)
Residual1b	2018 and 2011 Base group (1991, 1998, 2004)	-0.4083545*** (0.0270312)	-0.4419089*** (0.0296587)
Interaction1b			-0.356566*** (0.0678207)
Constant			0.03591*** (0.0121504)
Number of observations		-1.370251*** (0.1283432)	0.0359078*** (0.0121504)
Prob> chi2 =		18,320	13,361
		0.0000	0.0000

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Computed by authors using Stata 16.

All levels of education [primary (0.3596741), secondary (0.3736623) and tertiary (0.538828)], results show a positive and significant effect of education on the likelihood that a woman is working compared to those with no education. Results show that the higher the level of education, the higher the chances that the woman is working. That is, 100% increase in education level increase the chances that the women is employed by 36%, 37.4% and 53.9% for primary, secondary and tertiary levels of education respectively.

This result is in line with the findings of Aynaoui, [4] and Ajayi and Akua [2] who found that, on overall, women's participation in the labour market was largely influenced by education-related parameters. This can be justified by the fact that education increases the ease for women to get a job. Education equally increases the woman's wage thus increases the opportunity cost of leisure. This makes the woman to prefer work over leisure. Educated women also have jobs which are less difficult thus they are able to keep a job while taking care of their children at the same time. These women are also able to afford to pay the services of a maid, who can take care of the extra work at home thus leaving them time to

work. On the contrary, when seeking a nanny, I came across an uneducated woman in my neighborhood with three kids with a lot of financial difficulties and assumed she will like to work for me. When I asked her, she said she could not handle her kids and the job. For her, the opportunity cost (the care her children will lose) for working was bigger compared to the salary. The only job she can have with her certificate is one which leaves her no time to care for the children thus she preferred to stay unemployed. From the above discussion, it can be concluded that fertility hinders women's employment more for uneducated than educated women. This is more visible in urban areas where child care is more intensive than in the rural areas where most parents only meet their children in the night. These children are left to themselves during the day thus, the number of children does not affect women's employment but rather serve as additional labour force for their employment which is predominantly in the agricultural sector. Those resident in the urban areas are more likely to work compare to those in the rural areas. This results is however statistically insignificant, thus no need for a detailed discussion.

Compared to women in the poorest groups, women in the poorer (-0.1279485), middle (-0.247079), richer (-0.2345273) and richest (-0.1874587) groups are less likely to be employed. Amongst all the strata of wealth, richer women are less likely to work. All results are statistically significant except for women in the richest strata for the IV probit model, but significant for the control function model. This implies that women in the poorest groups are more likely to be employed compared to those in the richer status. That is to say, a woman with a poor wealth level is more likely to seek to be employed compare to richer women.

This result is in consonance with the work of Humpert and Pfeifer who specified that workers choose non-employment if their reservation wages were larger than the offered wages [24]. This is the case of our result where the poorest women are more likely to seek employment even in the agricultural sector because their reservation wage is most likely to be smaller than their offered wage. For example, women married to wealthy men or coming from wealthy homes have proven to prefer unemployment over working for a small pay. This can be justified by the fact that, even if they had many children, they have family members or husbands who can readily foot the bills of the children in case they are unemployed. However, when the women come from the poorest strata, they will seek employment and stay employed at all cost. This mainly explains why Cameroonians always prefer to have maids from poor families especially from the rural area. These poor girls are more willing to work on a low salaries (most times as low as 5000frs CFA per month) and poor working conditions (no adequate sleeping space and food). However, women from richer homes hardly accept such jobs, justifying the results showing higher employment level for women in the poorest wealth category.

Both the IV Probit and control function results give age negative (-0.0407256) and statistically significant results. This implies that, as a woman ages, the less likely she is to work. This result matches the findings of Mincer who specified fall in employment with a woman's age. It can be justified by the fact that the age limit for recruitment into the Public Service of Cameroon is 35 thus most old women do not have the chance to be employed [30]. The private sector also discriminates age when it comes to employment. It is difficult to see a company employ a 60 years old woman over a 30 years old having the same working experience. Most old women especially the uneducated ones prefer to work as nannies for their children's children both home and abroad than seek employment elsewhere. They estimate that their opportunity cost for working (in terms of their children staying out of the labour market to take care of children) is higher than the pay they get for working. This justifies why most women from 50 years in Cameroon are no longer stable in their jobs, talk less of seeking new employment. This is peculiar for women whose level of education is low, children are already grown-ups with grand children and their partners are financially stable.

Both results give a positive effect of husband's education on women's employment. This means that women whose

husbands had primary (0.2205867), secondary (0.2286017) and tertiary (0.2311317) education, were more likely to work compared to women whose husbands had no education. The higher the level of education of the man, the more likely the woman is to work. This result is statistically significant at 1% for all levels of education.

From observation, educated men give their wives more liberty compared to uneducated men. Uneducated men are most times complex, that they feel if their wives have a lot of liberty or work, they will either turn to look down or cheat on them. This result specifying that husband's education positively influences women's employment can also be justified by the fact that most educated men turn to marry women who are most likely to be educated and employed. Educated men most often serve as career counselors to their wives. It is not uncommon to see educated men moving from office to office to seek for placement opportunities or to compile the documents for an entrance examination for their wives, especially when these women are either pregnant or have just given birth. The education of the man also serves as a motivation for the woman to work hard and meet up with the husband's level. She wants to also feel important and accepted around her husband and his colleagues thus will turn to go back to school or seek employment. However, if the husband himself had no education she will hardly be fascinated by working especially in white collar-jobs. In addition, educated women also prefer educated men even if these women are not having a job. The very fact that the man is educated gives the women hope that he will find a good job soon.

On religion, compared to Catholics, Protestants (-0.0176316), other Christians (-0.3099415), Muslims (-0.4628571), Animists (-0.0636729) and those with no religion (-0.249509) are less likely to be employed. Muslim women are most likely to be unemployed when compared with Catholics and other religions. The control function result is statistically significant at all levels while the IV probit results for Protestants and Animists are not significant. Correll justifies this result with a supply-side mechanism on how cultural/religious beliefs about gender differentially influence the early career-relevant decisions of men and women [10].

Muslims for example, believe that a woman should not be exposed to the public as it can make her cheat on the husband or sin against "Allah". The desire not to be exposed makes them less educated and thus less employed when compared to Christians. This is seen in Cameroon as in most Muslim homes, it is only the husbands who work and sometimes to further prevent their wives from being exposed to the public, they go as far as opting to buy the groceries and food stuff needed for their home regularly. However, the trend is slowly changing as more Muslim girls are allowed to school and a lot of NGOs are advocating for the rights for education and employment of the Muslim women. This is evident in Cameroon as in 2008 when the University of Maroua was created (I happened to have been amongst the pioneer batch), the inhabitants of the "Grand Nord" insisted on having at

least 75% of the enrollment for that University which they ended up with more. This increases evidence of the changing trend for Muslim women's education and employment in Cameroon.

Being married (0.4334813) positively and statistically increase the likelihood of women working compared to being single. This finding contradicts the findings of Blank and Shierholz, and cited in Dayioglu and Kirdar, which concluded that, there is a negative effect of marital status on wages and labour force participation [13]. This contradictory result in Cameroon is justified by the fact that in Cameroon, being married is equivalent to having many children and relatives at home. Most couples in Cameroon compare to singles have larger household sizes thus increasing the financial burden of that house, while at the same time reducing the house chores burden on the woman and the need and ease for the women to work out of the home. Most of these women with no jobs in our neighborhoods are more likely to be single and uneducated ladies.

The likelihood that a married woman will be working also increases with her level of education. The negative results of being married and working are from findings in countries with high child allowance, high cost of nanny and daycare. Thus, couples prefer the woman stays at home to care for the children while the man works or vice versa because the unemployment benefits of the woman and child allowance are most times far larger than her salary minus the cost of nanny or daycare if she were to work. In Spain for example, the unemployment benefit and child allowance of a lady I know is far greater than the pay she could get from any work so her daughter has been her source of income for long. When this daughter turned 18 and her allowances were stopped, she had her own child. The new baby is now the source of income for the household. However, in Cameroon there is no unemployment benefit and the child allowance is as low as 2500frs while a woman can afford a nanny for as low as 20.000frs per month which is often far less than what she will gain if she were to work. This thus makes married women in Cameroon prefer employment over childcare.

The likelihood for a women to work positively (0.0518738) and significantly increases with her age at first cohabitation. This means that women who married later are more likely to be employed by 5% compare to those who married earlier. This result is in line with the findings of Dayioglu and Kirdar who found out that, women who got married at a later age were more likely either study and/or participate in the labour force [13]. This result is justified by the fact that women who married late are more likely to have been to tertiary education and have a job than those who married earlier. When a woman marries after completing her first degree and working, they are more likely to stay working after marriage and childbirth. Most women who married early are most times drop-outs or still schooling. This makes it very difficult for them to start work after marriage and children. It takes a lot of courage and determination for these women to decide to go back to school or look for jobs especially white collar jobs. Most times these

women only end up looking for jobs after 4 kids or decide to stay unemployed for life. More so, women who married later are most likely to be employed in skilled jobs while those who married earlier unskilled jobs. Housekeeping and unskilled job and a home are most times more difficult than keeping a skilled job (which demands less energy) and taking care of the home. This thus justified the positive results between age at marriage and women's employment.

The DHS data set for 2018 and 2011 gives a negative (-0.4083545) coefficient for women employment when compared to data sets for 1991, 1998 and 2004 put together. This means that in 2011 and 2018 women are less likely to work compare to the other years. A close look at the women's employment figures in Cameroon shows that, most of the women who contributed to the increase in the women employment figures were women in rural areas employed in the agricultural sector. With modernization, there has been an increase in rural-urban migration with very few women and even men willing to settle in the villages. Some of these women who move to the cities in search for greener pasture end up unemployed mean while they were fully employed in agriculture in the villages. More so, the Anglophone crisis has also facilitated this migration and drop in women's employment as most of the women who were gainfully employed in the rural areas in the Anglophone regions in the other years are now idling and depending on aid to survive in the cities. This further justifies the drop in the figures of women's employment in 2018 compared to the past years in Cameroon.

The predicted values (res1b) have a negative (-0.356566) effect on women's employment, when predicted for fertility at the first stage of the reduced form residual inclusion technique. A rise in res1b, will lead to a 35.66% significant fall in women's employment. This entails that there are residuals that have a correlation with fertility and they have a strong negative influence on women's employment. At this juncture, we reject the null hypothesis which states that the variables are exogenous. We accept the alternative as an indication that fertility is endogenous. Since the predicted value (res1b) is significant, it indicates that the endogenous effect of fertility is neutralized.

The predicted interactive variable for omitted confounder variables (inter1b) helps detect the effect of the unobserved heterogeneity or missing variables that influence the outcome variable and are correlated with the endogenous variable. They are the unknown regression parameters. Results from table 3 indicate that a rise in the missing or confounder variables (inter1b), may cause a significant (0.03591) positive effect on women's employment. This implies that a slight improvement in these confounder variables may improve on the women's employment in Cameroon. These unobserved latent variables may be other determinants of women's employment that can likely enhance the woman's employment status. The effect of the unobserved heterogeneity is neutralized since the predicted value (inter1b) is significant. The constant term is negative (-1.370251) and significant, implying in the absence of all

factors included in the model, the intercept significantly reduced women's employment. The chi square results are significant showing that, our model is on an overall statistically significant.

5. Conclusion and Policy Implication

This article investigated the effect of fertility and health on women's employment in Cameroon. The study utilized the expo-facto research design and pulled data from 1991, 1998, 2004, 2011 and 2018 DHS data set. The IV probit model, control function, 2SLS regression and the Multivariate and Fairlie decomposition models were used to analyze data on STATA 16. The result shows that the likelihood that a woman was employed increased with her fertility. The null hypothesis that there exist no significant effects of fertility on women's employment in Cameroon is rejected accepting the alternative and concluding that women's employment increases with fertility.

6. Recommendations for Follow-up Studies

This study looks at the effect of fertility and other factors on women employment in Cameroon using the DHS. We propose future study look at the effect of fertility and other determinants on women's employment in the formal sector.

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