The effect of fertility and education on female labour force participation in Ghana

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Abstract

This study examines the forces behind female labour force participation (FLFP) in Ghana by focusing on the role played by fertility and education, for both urban and rural dwellers. Applying a logistic regression to the fifth round of the Ghana Living Standards Survey (GLSS 5) we established that women with basic and tertiary education have a higher propensity of participation compared with those with no education. The results further indicate significant positive marginal effects for women with children, suggesting that having more children increases the likelihood of participation. This observation was more pronounced in the rural urban estimates. The paper suggests that women's labour force participation and home production are complements rather than substitutes considering the dominance of women in self-employment and/or informal sector where women are able to combine work and home production. Moreover, the study established a positive relationship between females in good health and the level of participation, and discusses some policy recommendations to encourage participation of women in the Ghanaian labour force.

1. Introduction

Remarkable socio-economic progress has been made in Ghana over the past two decades with GDP growth averaging over 5% and this growth is expected to be translated into the creation of employment. There has also been increasing degree of urbanisation and associated modernity and rising participation rate of men and women in market work. It is widely recognised that active participation of women in the labour force is essential for poverty reduction. Female labour force participation (FLFP) rates have gained interest and currency among researchers and development practitioners worldwide due to their usefulness in measuring the progress toward gender equality (Amoateng *et al*, 2003).

Estimates from Ghana's 2010 Population and Housing census indicate that females constitute 51.2% of the total population and 52.5% of working age population[7]. This implies that women in Ghana constitute more than half of the working age population and by extension should participate more in the labour force than their male counterparts. However, this is not the case due to labour market constraints that women face including child birth and lack of requisite education. FLFP rates have trailed behind that of males since 1960 although the gap has seen consistent decline as a result of increased participation of women in the labour market as against declines in male participation over the years (Baah-Boateng, 2012). As Sackey (2005) observes, despite the improvement in the participation of women in the labour market due to female activism and the important role played by most women especially single parents in the family, men still dominate.

Though there is a plethora of literature on FLFP worldwide there is limited number of literature on female labour force participation especially in Africa and less developed countries of which Ghana is no exception. Some studies have been conducted on the subject in Uganda (see Bbaale, 2008), South Africa (see Yakubu, 2010) and Ghana (Sackey, 2005). By far, the closest study to our current study is the work done by Sackey (2005). Nevertheless, our study is fundamentally, different from Sackey's (2005) because the current study thrives on the most recent Ghana Living Standards Survey (GLSS V) conducted in 2005/2006 relative to the data used by Sackey-GLSS3(1991) and GLSS4 (1998). The Ghanaian economy has witnessed changes over the past decade including changes in the sectoral distribution of GDP with the services sector overtaking agriculture as the highest contributor to national output. The results from this study make an interesting comparison with the work done by Sackey (2005) among others. Another departure of this study from the others is the inclusion of health status and non-market time allocated to child care in the model.

FLFP is an imperative indication of the extent to which females are involved in economic activities of any country. The main purpose of this paper is therefore to specifically analyse how women's fertility and education affect their participation in the labour market in Ghana. It further establishes the relationship between education and fertility on FLFP in Ghana among rural and urban women. The paper found that education has a significantly direct influence on participation of women in the labour force at the national level and in both rural and urban areas. In addition, fertility of women measured by the number of children below 18 years has a declining effect on women's participation in market work confirming the inverse relationship between childbearing as a measure of household production and FLFP. The paper recommends

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[7] Working age population comprises those aged 15 years and over based on minimum working age convention of the International Labour Organisation (ILO), i.e. Convention 138 of 1973

continue support for female education as a vehicle of facilitating increased women involvement in the labour market. Since health is complementary to education in inducing higher participation in the labour force, the current nationwide free maternal health policy encapsulated under the NHIS should be strengthened and adequately financed to ensure its sustainability.

The paper is structured into five sections with the theoretical and empirical review of the literature carried out in section two after the introductory section. The third section overviews labour force participation rate in Ghana followed by econometric analysis of labour force participation of women in section four with concluding remarks outlined in section five.

2.   Review of the Literature

Labour force participation refers to an individuals' decision whether or not to participate in the labour force (Ehrenberg and Smith, 1997). The labour force comprises employed or unemployed and excludes the economically inactive including men or women involved in household production. The proportion of the working age population who are either employed or unemployed is a measure of labour force participation rate.

2.1.   *Theoretical Literature*

Economic discussion of labour force participation behaviour of women has often been based on neoclassical labour supply model of labour-leisure choice (see Abbott and Ashenfelter, 1976), and household production theory (Becker 1965). The neoclassical model which is an extension of the utility maximization problem of consumer theory analyses how individuals make choices in deciding how they will spend a fixed amount of time. In the simplest model, an individual has two uses for his/her time, either working in the labour market at a real wage rate of W per hour, or enjoying "leisure". According to this basic model, individuals wish to maximize their utility or satisfaction by purchasing consumption goods in the marketplace and by consuming time in leisure activities, conditioned on individual's market wage, personal preferences and non-labour income. The response of labour supply to changes in market wage depends on the magnitude of substitution and income effect assuming leisure is a normal good. A negative non-labour income effect on labour supply is however predicted as rising non-labour income increases demand for leisure as a normal good and a decline in labour supply. Mincer (1962) establish a declining effect of husbands earnings on wives' involvement in market work in his pioneering work on determinants of labour force participation of married women.

Becker (1965) provides theoretical discussion of the importance of appreciating how individuals allocate time between market and non-market work. Market work

refers to participation in the labour force while non-market work involves activity performed by household members at home for their own consumption, using their own capital and unpaid labour referred to as household production. Examples of household production include preparation of meals, washing, child care and caring for the aged and housekeeping activity in general. The key implication of Becker's theoretical argument is how women labour force participation decisions are influenced by market wage, contribution to family wealth and taking care of young children, sick relative etc. The time allocation model of labour force participation predicts an inverse relationship between home wage (defined as household valuation of time) and labour force participation as more time is devoted for home production. Thus, changes in household demographics, such as the presence of children or sick relatives that increase the "home wage" (that is, keeping alive a sick relative) and hence home production, will reduce market work. Additionally, improved household production technology aided by availability of electric cookers, microwave ovens, washing machines etc. reduces time required for household production and releases more time for market work.

Related to the time allocation model of labour force participation is the human capital theory put forward by Becker (1957) in explaining the link between education and participation of women in the labour force. The individual's capital stock has an 'innate ability', and can be extended to prior participation in the labour force by education, during employment by on-the-job training and experience. Becker explains that over their working life, women are on the average, less productive when compared to men because they tend to take break from employed jobs for maternity leave and child-care. Furthermore, they bear the responsibility of the unremunerated domestic chores. Thus, the HCT emphasises the importance of education and training in the development of human capital. Over the life cycle, female labour force behaviour is governed by various factors. Very complex mechanisms determine the decision to enter, stay on, or leave the labour market. These include economic (that is the labour market structure), individual (skills, marital status, labour force attachment, incentives and career expectations), and household characteristics (structure, domestic workload, presence and number of children). Many studies aimed at analysing trends (Chase, 1995), economic and social determinants of labour force decision (Benjamin, 1992; Saget, 1999) either at micro or macro level.

2.2. *Empirical Literature Survey*

Cross-country study by Psacharopoulos and Tzannatos (1992) find that education has a positive effect on female labour force participation, Maglad (1998), on her part showed that education has a positive impact on female labour market participation. Empirical evidence on the effect of education on female labour force participation in Turkey also indicates a positive effect which is larger at higher education levels,

(Tansel, 1996). This is further confirmed by Tansel (2001) who found that education has a strong positive effect on female labour force participation in Turkey.

On the contrary, Smith and Ward (1985) found that in the United States, in 1900, the relationship between education and female participation was negative. Kottis (1990) found a similar result in Greece in 1971 and 1981. Most of these studies attributed this relationship to the fact that, low educational attainment of women as against men reduces their human capital endowment and therefore find it difficult to compete in the labour market. Some researchers suggested that the effect of education on female labour force participation depends on the level of development of a country.

Franz (1985) estimated female labour force participation function on education and fertility in the former West Germany using the Tobit econometric technique and found that while the participation of young single women decreased substantially, married women had a higher participation rate in the 1980s than the years preceding. One would have rather expected the single women to supply more labour than the married due to child care and other spousal responsibilities. It is possible that the increased responsibility of married women induced them to supply more labour and this is possible in such organised societies where the services of nannies could be hired to release married women to increase their participation the labour market.

In Italy, Bratti (2003), using data from the 1993 Survey of Household Income and Wealth conducted by the Bank of Italy estimated a reduced form *purist* model of female marital fertility and labour force participation. The model focused on the effect of formal education on both fertility and labour force participation, and accounted for the potential endogeneity of education. The result indicated that increasing education up to the upper secondary level exerts *ceteris paribus* a positive effect on marital fertility at ages 21–39 and that highly educated women postpone fertility with increasing effect on labour market participation.

Lehrer and Nerlove (1986) reviewed literature on fertility and female labour force behaviour in the United States. The review focused on the influence of fertility and female employment on three key variables: the value of female time, husband's income, and relative economic status. They concluded that factors that might mediate the fertility–labour supply nexus include childcare arrangements, husband's income, wife's education, and the convenience of employment. Differentials in the relationship between fertility and labour supply among racial and religious groups were noted. The article concludes with a discussion of changes over time in the association between fertility and female employment.

In South Korea, Chun and Oh (2002) estimated the effect of fertility on the labour force participation of married women. Since Korean households like other Asian

households, prefer sons to daughters, there is exogenous variation in the number of children among households, depending on their first child's sex. Using this exogenous variation as an instrumental variable for fertility, it is found that having children reduces the labour force participation of married Korean women by 27.5%. Though the son preference theory has been used to explain differences in fertility across and within countries, this is not the focus of our study. Though culturally, some ethnic groups in Ghana prefer sons to daughters, the preference is gradually waning overtime with the emphasis on having an ideal family size.

Studies by Bigsten and Horton (1997) and Appleton et al. (1990) on sub-Saharan Africa, and Mwabu and Evenson (1997) on Kenya, show that education is the most important determinant of labour market participation. A study by Fosu et al. (1999) on the cost of living and labour force participation of married women in urban South African labour markets concluded that, cost of living is non-extraneous within the labour force participation model and that it exerts a positive impact on the latter. Moreover, the apparent willingness of married women to participate in the labour force stems from a desire to provide their families with a higher standard of living. This finding is important since it underscores the welfare improvement rationale for female labour market participation.

Using the Uganda Demographic and Health Survey 2006, Bbaale (2008) corroborates the findings from elsewhere that female education, especially at the secondary and post-secondary levels reduces fertility and increases their likelihood of being engaged in the labour market. Yakubu (2010) using logistic regression, modelled the factors influencing female labour force participation in South Africa based on the 2008 Quarterly Labour Force Survey of Statistics South Africa. The paper reiterated the importance of female education in enhancing female labour force participation and concluded that the increased participation notwithstanding; women are still under-represented in the labour force.

Vyas and Clark (1974) estimated a labour force participation equation for different regions in Ghana and found among others that female labour force participation is positively related to average male earnings, which also contradicts findings in the developed market economies like the USA and Canada. They attribute this apparent contradiction to the existence of substantial substitutability between female family members and domestic servants and a substantial degree of substitution between home produced goods and market goods in less developed economies like Ghana's. Thus, the potential for a married female to work is highly influenced by the capacity of the family to hire domestic servants who are lowly paid, thereby reducing the household's valuation of time.

Sackey (2005) using the third and fourth rounds of the Ghana Living Standards

Survey of 1991 and 1998 respectively found that female education matters in both urban and rural localities; both primary and post-primary schooling levels exert significant positive impact on women's labour market participation, and have an opposite effect on fertility in Ghana. The paper concluded that it is important for government policy to ensure the gender gap in education which has become narrower over the years to be improved and sustained to promote female human capital and productive employment. Ackah et al (2009) corroborated the strong influence of education on labour force participation in Ghana.

A fundamental difference between our study and that of Yakubu (2010), Bbaale (2008) Sackey (2005) and Vyas and Clark (1974) *inter alia* is that in addition to using a more recent data, the current study examines the phenomenon from a rural-urban perspective. Thus, in addition to the pooled sample, we performed separate estimates for the rural and urban sub-samples to verify whether the correlates of participation in urban areas differ from rural areas, the outcome of which could have important policy implications.

3. Overview of Labour Force Participation in Ghana

The FLFP rate in Ghana has generally been lower than the rate for males but the gender gap has narrowed since 1960. As shown in Figure 1, participation rate for males has generally been higher than that of females but this has witnessed a decline from 89 per cent in 1960 to 73 per cent in 2010 representing a 16 percentage point decline over a period of five decades. In contrast, female participation rate has witnessed consistent increase from 57 per cent in 1960 to 82 per cent above the rate for males in 1984 before falling subsequently to 70 per cent in 2010.

The decline in male participation and the rise in the female participation is reflected in the female-male ratio of labour force participation from 0.64 in 1960 to 0.96 in 2010 suggesting a narrowing gap of participation rate between the two sexes. The increased participation of females in market works in about a period of half a century has been aided largely by improvement in female education. According to Baah-Boateng (2012), the proportion of females in the working age population with no formal education in Ghana declined from 91 per cent (76 per cent for males) in 1960 to 45 per cent (28 per cent for males) in 2006. On the other hand, the proportion with basic education rose from 9 per cent (21 per cent for males) to 47 per cent (55 per cent for males) over the period. The proportion of females with at least secondary education also surged from less than 1 per cent (2.4 per cent for males) to 8 per cent (17 per cent for males) over the 46 year period. In 2010, about 35 per cent of females in the working age population compared with 22 per cent of their male counterparts have never attended school compared with 36 per cent and 39 per cent of females and males respectively with basic education. In effect, 19 per cent

of females and 29 per cent of males have had secondary education or better. The surge in LFPR of females particularly between 1970 and 1984 is explained by the need for women to participate in market work to supplement declining household income as a result of severe economic decline experienced in Ghana in the late 1970s and early 1980s (Baah-Boateng, 2012). The period saw many Ghanaians in the labour force particularly men, migrate to Nigeria and Cote d'Ivoire to seek better job opportunities.

Figure 1: Labour force participation rate by gender (per cent) (1960-2010)
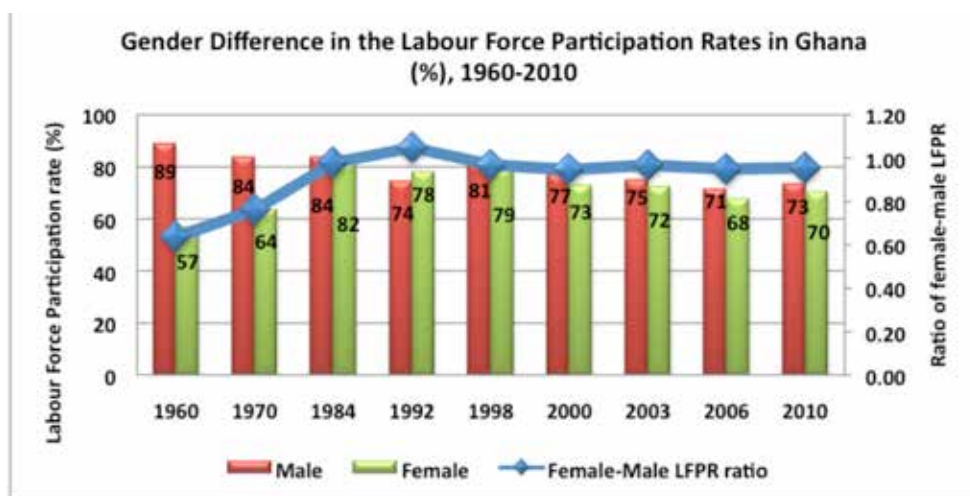
Note: -Population and Housing Censuses – 1960, 1970, 1984, 2000, 2010
　　　　-Ghana Living Standards Surveys (GLSS) – 1992, 1998, 2006
　　　　-Core Welfare Indicators Questionnaire (CWIQ) - 2003

Source: *Computed by Authors from Census data, GLSS3,4&5 & CWIQ*

Increased participation of women in market work is partly linked to the global campaign for women empowerment and gender equality. Over the years, gender activists in Ghana have advocated for policies and institutional arrangements to promote the involvement of women in all aspect of national life. In Ghana, policies targeted at improving welfare of women in the past were largely influenced by development paradigm of "Women in Development (WID)". During the implementation of the Structural Adjustment Programme (SAP) activities of WID shifted towards increasing the productivity of women through provision of micro credit in the informal sector. The establishment of National Council on Women and Development (NCWD) in 1975 provided support for women in income generating activities, job counselling in schools for girls to shape their future career choice and disseminated labour saving technologies for rural women.

The establishment of the 31st December Women's Movement (DWM) in the mid-1980s provided opportunity for many women to get involved in politics. The movement which was founded by the wife of the then Head of State of Ghana supported many women by creating the enabling environment to engage in economic activities such as food processing to enhance their economic status. The movement also established a number of day care centres in some cities, towns, and villages and set up many small scale income generating activities and agricultural projects nationwide to support women (Botei-Doku, 1990). In 2001, the government established a ministry for women and children affairs to formulate and facilitate the promotion of gender mainstreaming across all sectors of the economy. These measures coupled with the commitment to achieving the goal 3 of the Millennium Development Goals (MDG) have largely contributed to improved female labour force participation in Ghana.

4. Econometric Analysis

4.1. *Model Specification and Estimation Strategy*

A standard but simple model of the decision of a woman to engage in market work as a function of her level of education as a measure of her human capital endowments and the number of children below 18 years is specified as:

$$FLFP_i = \beta_o + \beta_1 \, KIDS_i + \beta_2 \, EDU_i + Z'_i\lambda + \varepsilon \tag{1}$$

Where, $FLFP_i$ is the participation status of the woman in the labour market, which is equal to 1 if the *ith* woman participates in the labour force and zero if otherwise. The primary variables of interest on the right-hand side of the equation are *KIDS which* captures the number of children below 15 years living with her in the household categorised into (1-2; 3-4; 5+) relative those with no children in the household; and *EDUC,* representing a vector of dummies of educational attainment of females (basic, secondary, and tertiary with no education as the reference dummy). The vector Z_i comprises additional information presumably influencing labour force participation, such as age dummies (youth: 15-24; adults: 25-59; with the old 60+ as reference dummy), marital status (married = 1: unmarried = 0), religion and ethnicity, measured by dummies of religious and ethnic affiliation; woman's location of residence, health status, cost of healthcare, contraceptive usage, and time spent on housekeeping.

Given the binary nature of the dependent variable, a logistic regression estimation technique is applied to the participation model to capture the education and fertility effect of female participation in the labour market. The choice of the logistic estimation is informed by the fact that the dependent variable is dichotomous (participate and not participate) and the model is useful in understanding the relationship between the predictors or explanatory variables and the binary response variable or dependent

variable. Equation (1) is therefore specified as

$$Pr[LFP=1|kids_i, EDUi, Z_i] = \Delta (\beta_o + \beta_1 KIDS_i + \beta_2 EDU_i + Z'_i \lambda)$$

$$= \frac{e^{b_0 + b_1 KIDS_i + b_2 EDU_i + Z_i'\lambda}}{1 + e^{b_0 + b_1 KIDS_i + b_2 EDU_i + Z_i'\lambda}} \qquad i = 1, 2, ..., n \tag{2}$$

From the probability density function for the logit model, the form of the logistic regression model is as follows:

$$Logit(p_i) = \ln \left[\frac{p_i}{1 - p_i} \right] = b_i x_i$$

With p_i being the probability that a woman participates in the labour force, b_i stands for the regression coefficient, x_i being the independent covariates, and the ratio $\left[\frac{p_i}{1-p_i} \right]$ being the odds that a woman participate in the labour force. By taking the exponent of each b_i, that is, exp (b_i), the result is interpreted as the relative odds of participating in the labour force for women with characteristics Z_i relative to individuals in the reference group. The marginal effect of the logistic regression is used in analyzing the empirical results in this work. The model helps to investigate the effect of the independent variables on the female labour force participation status.

4.2 Data and Descriptive Statistics

This study uses secondary data from the fifth round of the Ghana Living Standards Survey (GLSS5) conducted in 2005/06 by the Ghana Statistical Service. It is the most recent nationally representative household survey covering a sample of 8,687 households in 580 enumeration areas that contain 37,128 household members. The field work covered a period of 12 months (September 2005 to September 2006) and collected detailed information on topics, including demographic characteristics of the population, education, health, employment and time use, migration, housing conditions and household agricultural activities.

Table 1 presents Female Labour Force Participation FLFP rate by level of educational attainment, number of children under 15 years and location based on GLSS5 and indicates a higher participation rate among females in rural than in urban areas. The rate also increases with the number of children with 56 per cent rate recorded among females with no child compared with 84 per cent and 88 per cent rates among those with 1 or 2 and 3 or 4 children. The highest participation rate of 91 per cent is recorded among females with 5 or more children. Varying participation rates are also observed in relation to the level of formal education attained with the highest rate of 81 per cent reported among females with tertiary education and the lowest rate of 52 per cent observed among those with secondary and post-secondary education. The second highest participation rate of 77 per cent is observed among females with no formal education while 2 of 3 females with basic education participate in the market work.

Table 1: FLFP Rate by location education, number of children in 2005/06

Education	Rate	No. of Children	Rate	Location	Rate
No education	76.7	0	56.0	Urban	60.6
Basic education	66.9	1–2	83.5	Rural	75.3
Secondary+	51.5	3–4	87.9	All	70.0
Tertiary	80.6	5+	91.4		

Source: Computed by Authors from GLSS5

4.3 Analysis of Empirical Results

The estimation results of the logistic equation of FLFP model of equation (2) in terms of marginal effects are reported in Table 2. A simple version of the estimated model that captures only education and fertility effect on the probability of a woman participating in market work controlling for whether or not she is still in school is presented in column1 while column 2 add other relevant control variables to the primary explanatory variables in the model. The reason for controlling for current school attendance in the estimation is informed by the increasing incidence of school attendance among working people in Ghana. In recent times, some workers (both wage and self-employed) in Ghana combine work with part-time or evening school classes while some people in school make active effort to seek work to support their education. As expected, school attendance exerts a negative influence on the probability of female labour force participation in Ghana.

A pseudo R^2 of 0.19 for the simple version and 0.24 for the extended version is an indication of a considerably good fit of the model. This is confirmed by the statistically significant LR Chi^2 at 1% suggesting the joint significance of the regressors in explaining the probability of female participation in market work in Ghana. A 71 per cent and 72 per cent predicted probabilities conditioned on the regressors of the simple and extended version of the estimated logistic regression models respectively also underscore a high predictive power of the models.

Since the level of education attained adds up to one's human capital endowment, the higher the level of education the more likely one is expected to participate and the empirical results significantly confirm this. The empirical results reported on Table 2 largely indicate a significant positive impact of education on participation of women in the labour market. As expected, females with basic and tertiary education are more likely to participate in market work compared with their counterparts with no education. The magnitude of the marginal effect in both the simple and extended version is higher for tertiary than for basic education indicating the relevance of education on participation of females in the labour market. Similar observations

were reported in Turkey (see Tansel, 2001), sub-Saharan Africa (see Bigsten and Horton, 1997), Kenya (see Mwabu and Evenson, 1997), South Africa (see Yakubu, 2010) and Ghana (see Sackey, 2005). In the US in 1900 and 1981 in Greece, Smith and Ward (1985) and Kottis (1990) respectively observed the contrary.

Fertility of Ghanaian women is found to have significant and increasing effect on their labour market participation contrary to the theoretical argument that child care on account of high fertility compels women to allocate much more time to home production and reduce their participation in the market (Becker, 1965). As reported in Table 2, women with one or two children, three or four children, and five or more have a greater probability of participating in the labour market relative those with no child with the marginal effect all being statistically significant at 1% or 5% level. Our findings contradict Chun and Oh (2002) who observed that having children reduces labour force participation of Korean women.

Table 2: Marginal effects of Logistic Regression Results (pooled sample)

	Simple Version		Extended Version	
Variable	**Marginal Effects**	**z-value**	**Marginal Effects**	**z-value**
No. of children (No children as reference dummy)				
1 – 2	0.155***	15.21	0.050***	3.51
3 – 4	0.187***	18.40	0.042**	2.50
5+	0.225***	24.13	0.045***	2.63
Education (No education as reference dummy)				
Basic	0.013***	3.19	0.008*	1.86
Secondary	−0.056	−1.25	−0.026	−1.32
Tertiary	0.130***	3.37	0.115***	2.97
Still in school	−0.576***	−39.73	−0.516***	−27.15
Urban			−0.160***	−13.79
Age Dummy (the old 60+ as reference dummy)				
Youth (15-24)			0.057***	3.76
Adults (25-59)			0.305***	18.62
Married			0.079***	6.42
Contraceptive usage (yes)			0.023	0.99
Good health status			0.059**	2.23
Medical cost			−3.96e-08	−0.31
Non-labour time				
Time on children			−0.0004	−0.39
Time on cooking			−0.0004	−0.26
Time on other things			−0.002**	−2.50

Religion (traditional & atheism as reference dummy)

Catholics	0.072***	4.40
Pentecostal	0.054***	3.06
Other Christians	0.054***	3.14
Muslims	0.035**	2.06

Ethnicity (other ethnic groups as reference dummy)

Asante	−0.014	−0.58
Fante	−0.004	−0.87
Other Akans	−0.015	−0.61
Ewe	−0.050*	−1.86
Northern tribes	−0.052**	−2.39
Ga-Adangbe	−0.072**	−2.40

Pseudo R²	0.1866	0.2463
LR chi²	2,649.93***	3,498.85***
Pr (LF) (Predict)	0.7081	0.7249
Number of observation	11,642	11,462

*** 1% level of significance   ** 5% level of significance   * 10% level of significance*

The increasing effect of female fertility on labour force participation is largely explained by the need to engage in market work to enable them earn market wage in order to provide their family with higher standard of living. As noted by Fosu et al. (1999), the apparent willingness of married women to participate in the labour force stems from a desire to provide their families with a higher standard of living. Females are able to participate in market work even when they have children to cater for in the homes due largely to the flexible nature of the work they engage or seek to engage in. In Ghana, the dominant type of female employment is self-employment and/or informal employment, the nature of which enables them to combine with household activities. Estimates from the 2010 population and housing census indicate that self-employment accounts for about 70 per cent of total female employment in Ghana with wage employment accounting for about 13 per cent. Thus, the flexibility of self-employment affords women the opportunity to combine home production with market work and thus able to have more children and still participate in market work.

The results further indicate that young and adult females are more likely to participate in the labour market relative to the old with the magnitude of the probability being higher for adults than younger females. In addition, healthy females relative to unhealthy ones and the married relative to unmarried women are more likely to participate in the labour market. Christian and Muslim women relative to traditional and other religions are found to have a greater probability of

participating in the labour market while ethnicity have varying influence on labour force participation of women.

The results in Table 2 further reveals that females in urban areas are less likely to participate in market work relative to their counterparts in rural areas. A rural-urban comparison of the effect of education and fertility on female labour force participation is carried out and the results are reported in Table 3. A higher predicted probability of women's participation in the labour market conditioned on all control variables for rural than urban confirms the higher labour force participation of rural females than their urban counterparts. This is due to the fact that farming, on-farm and off-farm employment which do not require specialized skills are more prevalent in the rural areas relative to urban areas, thus increasing the chance of participation among rural residents.

Table 3: Marginal effects of Logistic Regression Results by Locality (Urban vs Rural)

	Urban		**Rural**	
Variable	**Marginal Effects**	**z-value**	**Marginal Effects**	**z-value**
No. of children (No children as reference dummy)				
1 – 2	0.190***	9.32	0.123***	10.99
3 – 4	0.241***	11.07	0.145***	13.19
5+	0.258***	11.89	0.185***	18.48
Education (No education as reference dummy)				
Basic	0.051**	2.51	0.038***	3.26
Secondary	0.047*	1.85	–0.038	–1.23
Tertiary	0.260***	5.63	0.064	0.63
Still in school	–0.626***	–45.54	–0.530***	–22.85
Age Dummy (the old 60+ as reference dummy)				
Youth (15-24)	0.071**	2.23	0.049***	3.05
Adults (25-59)	0.399***	14.21	0.234***	12.32
Married	0.064***	2.90	0.086***	5.96
Contraceptive Usage	0.057*	1.80	0.075***	2.64
Good Health Status	0.002**	2.50	0.059**	2.23
Medical Cost	2.75e-08	0.21	–1.14e-07	–0.51
Non-labour time				
Time on child	–0.003**	–2.13	0.002	1.30
Time on cooking	–0.0001	–0.03	–0.001	–0.68
Other time	–0.445***	–7.11	0.092**	2.15

Religion (traditional & atheism as reference dummy)

Catholics	0.096**	1.98	0.061***	3.99
Pentecostal	0.074	1.55	0.048***	2.72
Other Christians	0.084*	1.79	0.039**	2.39
Muslims	0.051	1.00	0.025	1.53

Ethnicity (other ethnic groups as reference dummy)

Asante	−0.090*	−1.92	0.034	1.37
Fante	−0.046	−0.94	0.013	0.46
Other Akans	−0.034	−0.73	−0.004	−0.14
Ewe	−0.162***	−3.32	0.016	0.61
Northern tribes	−0.112***	−2.60	−0.014	−0.59
Ga-Adangbe	−0.146***	−2.91	−0.023	−0.66

Number of observation	4,466		6,996
LR chi^2(6)	1,651.44***		1,623.91***
Pr (LF) (Predict)	0.5841		0.7893
Pseudo R^2	0.2742		0.2057

*** *1% level of significance   ** 5% level of significance   * 10% level of significance*

The results in Table 3 indicate that fertility effect on labour force participation of rural women is not different from the participation of urban women. This is based on the significantly positive marginal effect for women with children relative to those with no children in both rural and urban areas with the corresponding magnitude of the marginal effect increasing with number of children. The high degree of flexibility associated with work women engage or seek to engage in rural (mostly self-employment in agriculture) and urban (mostly non-farm self-employment, e.g. trading) areas affords them the opportunity to combine home activity and market work. The magnitude of marginal effects for each dummy for the different categories (number) of children is higher in urban than in rural areas suggesting an averagely higher participation rate of urban women than their rural counterparts. One could link this observation to relatively higher cost of living in urban than in rural areas that could compel women to engage in market work to provide or complement the efforts of their spouses in providing for the family.

In contrast, relationship between education and participation in the labour market differs between rural and urban women. While urban women with any level of education relative to those with no education are more likely to participate in market work, only rural women with basic education are more likely to participate in the labour market. This implies a stronger education effect on labour force participation in urban than in rural areas. Our finding is consistent with Yakubu (2010) who found

a significant association between educational attainment and FLFP and Sackey (2005) who observed that female education matters in both urban and rural localities in Ghana in the 1990s.

The results further show a greater probability of the young and adult women relative to the old in both rural and urban areas participating in the labour market with the magnitude of the marginal effect being higher among urban than rural women suggesting stronger labour force participation of young and adult women in urban than in rural areas. In addition, married women relative to their unmarried counterparts in both rural and urban areas are more likely to participate in the labour market with stronger marginal effect reported in rural than in urban areas. Additionally, healthy women and those who use contraceptives in rural and urban areas are more likely to participate in the labour market. Stronger effects of contraceptive use and health status of women are however observed in rural than in urban areas.

The effect of non-labour time on female labour force participation varies between rural and urban women. Time spent on child care have a decreasing effect on the likelihood of urban woman participating in the labour market with no effect on labour force participation of rural woman. Time spent on other home activities by urban women negatively affect their labour force participation while a significantly positive effect is observed on labour force participation of rural women. Moreover, while ethnic origin influences labour force participation of urban women no significant ethnic effect is observed on labour force participation of rural women. In terms of religion, while female Catholics and other women Christians in urban areas are more likely to get involved in market work, all Christian women in rural areas have a greater probability of participating in market work.

4. Conclusion

The economic development of a country depends positively on the level of labour force participation. Interest in FLFP worldwide led to many discussions in a series of historical studies in both the developed and developing nations. Due to the positive impact on individual's standard of living and economic development in general, policies must therefore be developed to encourage the participation of women in the labour force.

From the study, education and fertility were found to be significant determinants of the level of female labour force participation. The education variable hinted that, women with some level of education participates more as compared to those with no education. thus, policies targeted at promoting education of women (not necessarily at the expense of men) is highly recommended as a tool to promote female participation in market work and their earnings for the enhancement of standard of living of families.

The paper also establishes an increasing effect of female fertility on labour force participation such that the more the number of children a woman has the more likely she is to participate in market work. Thus, the flexible nature of self-employment which is a major type of employment for women provides opportunity for them to combine home production and market work. Policy measures designed to support women in self-employment and/or informal economic activities such as micro-financing to improve the quality of work would prevent child bearing women from reneging on their home production responsibility in favour of market work and vice versa but give them the opportunity to combine home production with market work. Also, the study established a positive relationship between females in good health and the level of participation. Since good health is a major driving force in of labour force participation, policies in the area of regular health education with more emphasis on the health of rural women need to be encouraged to promote female participation in market work and raise their economic empowerment. In this direction, the current government policy on free maternal health should be continued in a sustainable manner and be more responsive to the health of women in the rural areas.

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