
# GDN Working Paper Series

## Determinants of Female Labour Force Participation in Ghana

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**Working Paper No. 14**

**September 2009**

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This Working Paper has been prepared within the GDN's Global Research Project *Institutional Capacity Strengthening of African Public Policy Institutes to Support Inclusive Growth and the MDGs*. The project has been fully funded by the United Nations Development Programme's (UNDP) Bureau for Development Policy (BDP) and Regional Bureau for Africa (RBA). The views expressed in this publication are those of the author(s) alone.

# Determinants of Female Labour Force Participation in Ghana

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***Abstract***

The increasing integration of women into the economy in developing countries has become one of the most important goals of development efforts. In this regard, the equity and efficiency related MDGs, in particular, eliminating gender disparities in primary and secondary education, improving maternal health, reducing child mortality and in promoting gender equality and empowering women, are desirable goals. This paper investigates the determinants of female labour force participation in Ghana at two points in time, 1991 and 2006, with the view that labour market participation of women will improve their relative economic positions and also increase overall economic efficiency of the country. Analyses of data from the 1991/92 and 2005/06 Ghana Living Standards Survey suggest that both women's educational attainment and fertility determine women's labour force participation in Ghana. Women with primary school education or above are more economically active than those with no education. However, this pattern is only found among women participating in wage employment. We also find that high fertility acts as a constraint on female participation in wage employment. The presence of children in the home significantly reduces participation in wage work, controlling for age, education, ethnicity, religion and marital status.

***Keywords***: female labour force participation, education, fertility, Ghana.

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## 1. Introduction

The full integration of women into the economy has become one of the most important goals of development efforts. In this regard, the equity and efficiency related MDGs, in particular, eliminating gender disparities in primary and secondary education, improving maternal health, reducing child mortality and in promoting gender equality and empowering women, are desirable goals. Yet, women are still underrepresented in the wage sector in both developed and developing countries. Recent scholarship argues that disparities in labour market participation are not due to gender *per se*, but are attributable to the fact that women are disproportionately responsible for bearing and raising children (see Waldfogel, 1998). The enactment of laws which address gender discrimination and discrimination due to marital status; pregnancy, race and sexual preference have ensured a fair treatment of women workers. Other different factors have been put forward as potentially explaining the increase in women workers over the years. For instance, the influence of technological change in the workplace and in the household; the introduction and dissemination of the oral contraceptive and the greater availability of childcare are some of the factors considered. The forces of globalization have also been identified as having brought forth a feminization of the workforce in poor countries (Anker 1998; Standing 1999). As a result, many households in developing countries have witnessed a dramatic decline in dependence upon men's income, and a concomitant expansion of women's participation in income-generating work (Chant 2002, cited in Korinek (2004)). In spite of this, there is a consistent partitioning of women into predefined jobs. For example, many more women work in the services sector as compared to men. In addition, for numerous developing countries, there has been a growing tendency for more women to be engaged in the informal sector than men. Many women still find restrictions in attaining some managerial jobs and grapple with maternity decisions and family tradeoffs (Murray and Syed, 2007).

This paper investigates the determinants of female labour force participation in Ghana at two points in time, 1991 and 2006, with the view that labour market participation of women will improve their relative economic positions and also increase overall economic efficiency of the country. The paper examines individual and household attributes that affect female labour force participation and whether motherhood and the presence of children at home have the tendency of reducing a woman's propensity to engage in paid work. Using data from household surveys conducted in 1991/92 and 2005/06, we analyse the determinants of fertility and female labour force participation and the role of education in explaining the relationship. The main hypotheses tested are (1) the human capital and modernization hypothesis that female education is positively related to the likelihood of participating in the labour force, and (2) the neoclassical hypothesis that the presences of children in the home will retard female labour supply (see Mincer, 1962; Cain, 1966). We draw on theories spanning a variety of social science disciplines to inform hypotheses about how the level of education and the presence of young children in the home can affect women's labour force participation. The paper also examines whether the determinants of female labour force participation changed between 1991/92 and 2005/06. The rest of the paper is organized as follows: the next section presents a review of both theoretical and empirical perspectives on the relationship between

maternal education, fertility and labour force participation. Section 3 presents the methodological issues, including data sources, sample selection, variable definitions and summary statistics. Section 4 reports the empirical results while Section 5 presents conclusions.

## 2. Literature Review

### *2.1. Theoretical background*

The increasing trend toward women's participation in the labour market in both developed and developing countries has drawn both social and academic interest resulting in many insightful studies on gender aspects of labour market issues. A critical review of the large literature provides at least two general theoretical paradigms to explain the changing patterns of female labour force participation in low-income countries. In a very succinct summary of the theoretical background explaining the way in which levels of economic development influence patterns of female labour force participation in developing countries, Shungee Nam (1991), categorizes the literature into two perspectives, the modernization and the world system perspectives.

According modernization theorists, economic development is positively associated with female labour force participation through change in the country's occupational structure (i.e. the increasing availability of service and white-collar jobs) and increased educational opportunities, often accompanied by reduced fertility rates and household responsibilities. The modernization process is associated with increased demand for labour, a general social acceptance of women's education and employment, as well as lower fertility (Heckman, 1980; Standing, 1981; Bauer and Shin, 1987). The relationship between education and female labour force participation has been summarized by Standing (1981) under three hypotheses: the opportunity cost hypothesis, the relative employment opportunity hypothesis, and the aspiration hypothesis (see Nam, 2004). First, the opportunity cost argument conceives that to the extent that there is a positive relationship between educational investments and earnings potential, education raises the opportunity cost of economic activity, thereby giving people a positive incentive to seek employment (see Bowen and Finnegan, 1969). The relative employment opportunity hypothesis posit that employers usually tend to have a positive bias towards a qualified female work force rather than older male workers whose educational qualifications increase their employment options (see Long, 1958; Oppenheimer, 1970). Lastly, the aspiration hypothesis is based on the human capital hypothesis that women with higher levels of education are more likely to participate in the labour market. From this view point that income aspirations and expectations of people are strongly determined by levels of education, more-educated women are expected to have higher income aspirations over their less-educated counterparts and therefore tend to be more active in the labour market (see Morgan et al., 1962; Cain, 1966).

The world system perspective, on the other hand, explains the increasing labour force participation in the context of traditional comparative advantage international trade

theory. From the perspective of the Stolper-Samuelson theorem, global trade liberalisation would lead to a rise in the demand for unskilled labour in developing countries. In other words, since developing countries are more likely to have a comparative advantage in producing unskilled labour-intensive goods, one would expect international trade in these countries to lead to a rise in the demand for and relative returns of the abundant factor; unskilled labour in the case of developing countries (see Krueger, 1983; Harrison, 2005). Since more females than males tend to be unskilled and female labour is usually cheaper than male labour, labour-intensive industries tend to be relatively dominated by females, particularly those who are young and single (Grossman, 1979).

While a positive correlation between levels of education and female labour force participation has been postulated theoretically, empirical findings in developing countries are rather mixed (see Standing, 1981). Studies have shown that female labour force participation is another variable which appears to be associated with lower fertility rates in different parts of the world (Kalwij, 2000; McLeod, 2005). Empirical evidence from both developed and developing countries confirm that female education is associated with a greater incentive to participate in market activity.

Neoclassical theory suggests that high levels of investment in human capital and greater participation of women in the labour market are negatively associated with lower fertility rates. In general, however, the causal impact of female labour force participation on fertility may occur along a number of complex pathways because both female labour force participation and lower fertility may reinforce each other. The relationships between female labour force participation and fertility have been 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 mother conflict (Goldstein 1972; Bindary, Baxter & Hollingsworth 1973). The implication of this hypothesis is that a negative relationship between female employment and fertility exists to the extent that they are competing uses of time. Otherwise, we should expect to find no relationship, or even a positive relation between employment and fertility. Substantial empirical evidence abounds both in support of and against this hypothesis (Mason and Palan 1981; Isvan 1991).

### *2.2. Theoretical Framework*

The study uses a standard participation model based on conventional theoretical household models of time allocation (Mincer, 1962; Becker, 1965; Gronau, 1977; Blundell and MaCurdy, 1999; Troske and Voicu, 2009). While various dimensions of the life cycle models have been formulated and tested in the literature on fertility and labour supply, data limitations impose restrictions on our choice of model.[2] We adopt the

[2] See Rozenzweig, 1976; Ben-Porath, 1973; Willis, 1973; for examples of the use of one-period static life cycle models; and Rozensweig and Wolpin, 1980; Sprague, 1988; Troske and Voicu, 2009; for formulations and applications of multi-period life cycle models.

standard static, within-period labour supply model based on basic consumer theory.[3] Assuming an individual maximizes a well behaved utility function ($U$) that is defined over her within-period consumption of commodities ($C$) and leisure ($L$), the model can be expressed formally as,

$$U = U(C, L, X) \tag{1}$$

where, $X$ indicates individual and household characteristics such as age, marital status, ethnicity, etc. The number of children and any other dependents are included in the vector of individual and household attributes, $X$. Utility is assumed to be maximized subject to the budget (income and time) constraint

$$C + WL = Y + WT \tag{2}$$

where $W$ is the wage rate, $Y$ is non-labour income and $T$ is the total time available. The individual maximizes a utility function subject to the constraint imposed by the fixed time T and how to allocate her time to home production, market work and leisure. Thus, the optimal allocation of time to market work will be determined by the personal and household attributes as well as on the labour market characteristics. The labour market conditions determine the costs of a job search and the remunerations of the market work. The solution to the optimization problem results in the familiar first-order conditions

$$U_C(C, L, X) = \lambda, \qquad U_L(C, L, X) \geq \lambda W \tag{3}$$

where $\lambda$ is the marginal utility of income and equation (3) involves, on the one hand, the demand function for the utility-generating commodities, and, on the other hand, the optimal allocation of time among leisure, market work, and home production. If the inequality in equation (3) holds strictly then the individual is not working and $L = T$. The wage, $W_R$, such that $U_L(Y, T, X) = \lambda W_R$, is the reservation wage below which the individual will not work; i.e., the individual participates in market work if and only if the expected market wage is greater than the reservation wage.

## 3. Estimation Methods

The theory allows us to specify a standard but very simple labour force participation equation that models the decision of a woman to engage in market work as a function of her human capital endowments, specifically, educational attainment, and the presence of children in the home as follows:

[3] We do not have repeated observations to allow inter-temporal utility functions and study past or future behaviours that influence female participation.

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$$LFS_i = \alpha + \phi KIDS_i + \sum_j \eta_j EDUC_{ji} + Z_i^{'}\lambda + e_i \quad (4)$$

where, $LFS_i$ is the labour force status of the woman, which is equal to 1 if the i-th woman is in the labour force and zero otherwise. We have three alternative definitions of participation; (1) first, participation is defined to include a woman declaring a job, paid or unpaid, in the last 7 days – this categorization includes those who are in paid employment and those who are unpaid family laborers. Women working on the family farm or business are considered economically active and thus counted in the labor force; (2) second, participation is restricted to included only paid market work, both wage work and self-employment; (3) finally, participation is restricted to only paid (wage) employees.

The primary variables of interest on the right-hand side of the equation are is $KIDS_i$ and it captures the number of children up to fifteen years living in the home and $EDUC_{ji}$, a categorical indicator of educational attainment. In an alternative specification, $KIDS_i$ is replaced with a dummy variable, $CHILD05_i$, indicating the presence of children under six years in the home. The vector $Z_i$ comprises additional information presumably influencing labour force participation, such as age and marital status, religion and ethnicity, rural-urban dummy and dummies representing the woman's region of residence.

## 4. Data Sources and Description

In this subsection we describe the data and the main features of the variables that are relevant for the subsequent econometric analysis. The main source of data for this study is the Ghana Living Standards Survey (GLSS), conducted by the Ghana Statistical Service in collaboration with the World Bank. We use the third and fifth rounds referring to the periods 1991/92 and 2005/06 respectively. The 1991/92 (GLSS3) data contains 4,552 households, with an average household size of 4.5 members, giving a total of 20,484 individuals. The 2005/06 (GLSS5) survey on the other hand covered a sample of 8,686 households containing 36,481 household members giving an average household size of 4.2.[4] The surveys follow a two-stage sampling process. At the first-stage of the selection process, a pre-determined number of Enumeration Areas (EAs) was randomly selected with probability proportional to estimated size from which a fixed number of households were systematically selected from each selected EA to give the total of households. Both rounds collected information on households and community characteristics and reproductive histories of one randomly selected woman of childbearing age in each household. Our working sample consists of all women within the prime ages of 15 to 64 to whom the fertility module of the survey was administered.

[4] For more information on the GLSS, including more details on the sample design, strata weights, and fieldwork, see GSS (2000a, 2000b) and Coloumbe and McKay (2003).

These exclusion restrictions leave us with a sample of 5,271 and 10,294 individuals from GLSS3 and GLSS5 respectively.

The woman is the unit of analysis. The sample is selected conditional on being a woman so that the effects of education and labour force participation conditional on being a woman are examined. Among the individual and household-level variables, we start by considering the following categories of variables: a set of demographic variables, variables relating to educational attainment, number of children of school going age, marital status and religion are considered in the analysis as potential determinants of fertility and labour force participation. Linear and quadratic terms in the age are also included to capture possible life-cycle effects. We include regional dummies in our models as dummy variables to control for the effects of regional characteristics. Doing so allows us to gauge the effects of the other determinants independent of the effect of regional conditions. We allow for sectoral heterogeneity by including a dummy for women located in urban households. Using the information on the highest qualification obtained, we define three categorical education indicators: None, Basic education, and Secondary education.

Table 1 reports the means and standard deviations of the variables for the selected sample of women. Mean fertility in 1991/92 was slightly greater than that in 2005/06, 4, compared with 3.9. Ghana embarked on a massive expansion in the provision of education during the 1990s which has resulted in the increased educational attainments during the period. The proportion of illiterate women (no education) fell from 75 percent to 67 percent while the proportion of women with basic (primary) education increased from about 22.4 percent to 26.4 percent. There was substantial increase in the proportion of women who have completed more than secondary school education, from 3 percent in 1991/92 to 6.2 percent in 2005/06. Incidentally, we observe a decrease in female labour force participation rates between 1991/92 and 2005/06 for all the alternative definitions. Wage employment declined from 7.8 percent to 6.1 percent over the same period, consistent with the public sector retrenchment which began in the mid 1990s under SAP/ERP (see Aryeetey, 2005). However, it is important to note that overall aggregate employment rose from about 5.5 to 8 million, a gain of some 2.5 million over the same period. But due to the rapid population growth, employment rate for the country as a whole has been declining since 1991, from about 75.9 to 71.6 percent (World Bank, 2007).

Table 2 gives an idea about the means of various personal attributes and household characteristics by labour force participation. About two-thirds of women who do not participate in the labour market have no education, compared to about a third for those in the labour force, although this pattern appear to decline over time. This indicates the importance of education in increasing labour force participation of women. In terms of fertility, Table 2 shows that women in the labour force have on average about one child less than their counterparts not in the labour force. Table 2 also shows the female labour force participation profiles by marital status. Highest participation rates are observed for married women and lowest participation rates are observed for widowed women.

**Table 1: Means and Standard Deviations of Variables**

| | 1991/92 | | 2005/06 | |
|---|---|---|---|---|
| | Mean | Standard deviation | Mean | Standard deviation |
| ***Dependent variable*** | | | | |
| Participate in any market activity | 0.822 | 0.382 | 0.703 | 0.457 |
| Participate in wage & non-agric self-employment | 0.494 | 0.500 | 0.430 | 0.495 |
| Participate in wage employment | 0.078 | 0.268 | 0.061 | 0.238 |
| ***Explanatory variables*** | | | | |
| Woman's Age | | | | |
| 15-24 | 0.326 | 0.469 | 0.333 | 0.471 |
| 25-34 | 0.267 | 0.442 | 0.244 | 0.430 |
| 35-44 | 0.188 | 0.391 | 0.194 | 0.396 |
| 45-54 | 0.149 | 0.356 | 0.147 | 0.354 |
| 55-64 | 0.070 | 0.255 | 0.082 | 0.274 |
| Woman's education | | | | |
| None | 0.746 | 0.435 | 0.672 | 0.470 |
| Primary | 0.224 | 0.417 | 0.264 | 0.441 |
| Secondary | 0.030 | 0.170 | 0.062 | 0.242 |
| Fertility | | | | |
| Number of children born alive | 4.065 | 2.536 | 3.901 | 2.406 |
| Number of children under 16 years | 2.940 | 2.199 | 2.548 | 2.247 |
| Presence of child under 6 years | 0.639 | 0.480 | 0.526 | 0.499 |
| Woman's marital status | | | | |
| Single | 0.226 | 0.418 | 0.273 | 0.445 |
| Married or Cohabiting | 0.629 | 0.483 | 0.581 | 0.493 |
| Widowed | 0.052 | 0.222 | 0.065 | 0.246 |
| Separated or Divorced | 0.088 | 0.283 | 0.081 | 0.272 |
| Woman's ethnicity | | | | |
| Akan | 0.452 | 0.498 | 0.587 | 0.492 |
| Ewe | 0.121 | 0.326 | 0.062 | 0.241 |
| Ga | 0.092 | 0.288 | 0.044 | 0.204 |
| Other | 0.335 | 0.472 | 0.308 | 0.462 |
| Woman's religion | | | | |
| Christian | 0.631 | 0.483 | 0.693 | 0.461 |
| Moslem | 0.144 | 0.351 | 0.182 | 0.386 |
| Other | 0.225 | 0.418 | 0.125 | 0.330 |
| Urban resident | 0.362 | 0.480 | 0.391 | 0.488 |
| Dummy=1 if receives remittances | 0.462 | 0.499 | 0.739 | 0.439 |

*Source*: Authors' calculations.

**Table 2: Descriptive Statistics**

| | 1991/92 | | 2005/06 | |
|---|---|---|---|---|
| | *LFS=0* | *LFS=1* | *LFS=0* | *LFS=1* |
| ***Explanatory variables*** | | | | |
| Woman's Age | | | | |
| 15-24 | 0.338 | 0.174 | 0.326 | 0.219 |
| 25-34 | 0.257 | 0.382 | 0.240 | 0.330 |
| 35-44 | 0.181 | 0.275 | 0.198 | 0.228 |
| 45-54 | 0.151 | 0.128 | 0.150 | 0.172 |
| 55-64 | 0.072 | 0.041 | 0.086 | 0.051 |
| Woman's education | | | | |
| None | 0.781 | 0.329 | 0.701 | 0.226 |
| Primary | 0.202 | 0.481 | 0.253 | 0.440 |
| Secondary | 0.016 | 0.188 | 0.046 | 0.324 |
| Fertility | | | | |
| Number of children born alive | 4.145 | 3.256 | 3.953 | 3.116 |
| Number of children under 16 years | 2.989 | 2.360 | 2.608 | 1.608 |
| Presence of child under 6 years | 0.647 | 0.548 | 0.537 | 0.352 |
| Woman's marital status | | | | |
| Single | 0.231 | 0.162 | 0.271 | 0.301 |
| Married/Cohabiting | 0.625 | 0.671 | 0.585 | 0.518 |
| Widowed | 0.053 | 0.041 | 0.066 | 0.043 |
| Separated/Divorced | 0.085 | 0.123 | 0.077 | 0.137 |
| Woman's ethnicity | | | | |
| Akan | 0.450 | 0.476 | 0.585 | 0.614 |
| Ewe | 0.118 | 0.159 | 0.064 | 0.030 |
| Ga | 0.083 | 0.193 | 0.041 | 0.086 |
| Other | 0.349 | 0.171 | 0.310 | 0.270 |
| Woman's religion | | | | |
| Christian | 0.616 | 0.807 | 0.683 | 0.855 |
| Moslem | 0.146 | 0.121 | 0.185 | 0.124 |
| Other | 0.238 | 0.072 | 0.131 | 0.021 |
| Urban resident | 0.329 | 0.744 | 0.365 | 0.802 |

*Source*: Authors' calculations based on data from the GLSS3 and GLSS5.
*Note*: LFS indicates the probability that woman participates in the wage sector as employee.

## 5. Estimated Results and Discussion

The odds ratios from the OLS estimates of equation (4) are reported in Tables 3 and 4. The only difference between Models 1, 2 and 3 is the definition of labour force participation. For each survey year, we first estimate an equation including the mentioned

controls defining the labour force status of a woman broadly as a dummy equal to one if a woman reported engaging in any economic activity. The results for this specification are reported throughout in the first column as Model 1. Since it is plausible that the presence of children in the home and education may weakly determine the propensity of a woman engaging in unpaid family work, we adopt an alternative definition for the labour force status to be equal to one if a woman engages in an economic activity for pay or profit. This definition of labour force participation includes self-employed women such as traders and artisans. The results from this regression are reported as regression Model 2 throughout. Finally, we adopt a more restrictive definition of labour market participation to only include those women who actually work for pay (i.e. wage employment). The detailed results for this regression are reported in column three as Model 3 throughout. This alternative definition of labour force participation is motivated by the notion that an inverse relationship occurs between women's work and motherhood only when the roles of worker and mother conflict. In all regressions, the reference state is 'not in the labour force' (or 'wage employment'). The interpretation of the coefficient estimates is therefore how the relevant determinant affects the odds of being in the labour force (or wage employment).

The estimates from all three models yield very interesting results and appear to support the maternal role incompatibility hypothesis. What is interesting about Model 1 is that when *LFS* is defined that broadly to include unpaid work, education turns out being not statistical significant and sometimes with negative coefficients (Table 4). Another interesting finding is estimation of either a positive and significant coefficient on number of children (Table 3) or a negative but insignificant (Table 4). The implication of this finding is that the presence of children in the home could actually be an incentive for women to be active in the labour market, in particular, agricultural and non-agricultural self-employment.

We now move to the discussion of the results derived from the estimation of Models 2 and 3. Both specifications show that for each additional young child, the odds of participating in the labour market for women decreases by a factor of approximately 0.9. This holds for both years. Overall, the results suggest that the presence of children under sixteen years does have a significant negative effect on female labour force participation. The larger the number of children a woman has, the less likely she is to participate in paid work. The results demonstrate that mothering and working tend to conflict irrespective of how participation is defined, suggesting possible trade-offs between the number of children and employment. With regards to education, the results in columns 2 and 3 confirm previous results that indicate a strong positive relationship between educational attainment (particularly, after completing basic primary education) and the probability of a woman being employed. As expected, the effects of education are strongest in the determination of wage employment (column 3). Regarding the effects of additional participation determinants, most of the results correspond to expectations. Age has predictable patterns on the probability of being in the labour force and the probability of engaging in wage work in 2005/06. Relative to the reference category (55-64 years), being in the prime age categories (35-54 years) tend to be associated with higher participation probabilities, compared with being in the 15-24 year age category. As

expected, women resident in urban communities are more likely to participate in market work and compared to other forms of religion, Christian and Moslem women tend be more active in market activities.

**Table 3: Determinants of Female Labour Force Participation, 1991/92**

| | Model1: Any job | Model2: Any paid job | Model3: Wage job |
|---|---|---|---|
| Number of children under 16 yrs | 1.046* | 0.957** | 0.926* |
| | (0.023) | (0.016) | (0.030) |
| Non-labour income dummy | 1.355*** | 1.136 | 0.917 |
| | (0.121) | (0.078) | (0.108) |
| Woman's Age | | | |
| 15-24 | 0.775 | 0.432*** | 0.700 |
| | (0.155) | (0.067) | (0.243) |
| 25-34 | 2.536*** | 1.131 | 1.562 |
| | (0.512) | (0.164) | (0.487) |
| 35-44 | 3.757*** | 1.435* | 1.782 |
| | (0.850) | (0.215) | (0.563) |
| 45-54 | 2.405*** | 1.300 | 1.570 |
| | (0.501) | (0.191) | (0.502) |
| Woman's education | | | |
| Primary | 0.983 | 1.536*** | 4.135*** |
| | (0.103) | (0.137) | (0.577) |
| Secondary | 0.94 | 1.634* | 17.16*** |
| | (0.206) | (0.35) | (3.727) |
| Woman's marital status | | | |
| Married/Cohabiting | 4.425*** | 5.809*** | 1.579* |
| | (0.537) | (0.68) | (0.328) |
| Widowed | 2.061** | 11.35*** | 1.852 |
| | (0.478) | (2.25) | (0.655) |
| Separated/Divorced | 3.456*** | 10.24*** | 1.852* |
| | (0.657) | (1.627) | (0.48) |
| Woman's religion | | | |
| Christian | 1.026 | 1.034 | 1.783** |
| | (0.13) | (0.0931) | (0.384) |
| Moslem | 1.405 | 1.788*** | 2.106** |
| | (0.249) | (0.217) | (0.583) |

**Table 3: Determinants of Female Labour Force Participation, 1991/92 (Continuation)**

| | Model1: Any job | Model2: Any paid job | Model3: Wage job |
|---|---|---|---|
| Woman's ethnicity | | | |
| Akan | 0.876 | 1.273* | 1.223 |
| | (0.125) | (0.132) | (0.254) |
| Ewe | 0.709 | 1.155 | 1.36 |
| | (0.133) | (0.17) | (0.355) |
| Ga | 0.834 | 1.184 | 1.951** |
| | (0.165) | (0.19) | (0.501) |
| Urban resident | 0.215*** | 1.689*** | 3.001*** |
| | (0.0212) | (0.133) | (0.404) |
| Region | | | |
| Western | 0.734 | 1.281 | 0.846 |
| | (0.148) | (0.189) | (0.235) |
| Greater Accra | 0.763 | 1.496* | 0.772 |
| | (0.155) | (0.259) | (0.199) |
| Eastern | 0.642** | 1.306* | 0.924 |
| | (0.107) | (0.165) | (0.195) |
| Volta | 1.013 | 2.381*** | 1.445 |
| | (0.232) | (0.423) | (0.419) |
| Ashanti | 0.714* | 0.875 | 0.809 |
| | (0.116) | (0.106) | (0.173) |
| Brong Ahafo | 1.325 | 0.89 | 1.094 |
| | (0.278) | (0.127) | (0.291) |
| Northern | 0.553* | 0.440*** | 1.452 |
| | (0.128) | (0.0757) | (0.482) |
| Upper West | 0.701 | 0.340*** | 0.963 |
| | (0.222) | (0.0728) | (0.48) |
| Upper East | 1.316 | 0.182*** | 0.596 |
| | (0.443) | (0.0367) | (0.337) |
| Observations | 5271 | 5271 | 5271 |

*Source:* Authors' calculations based on data from the GLSS3 and GLSS5.
*Note:* We report the odds ratios and robust standards errors in parentheses.
*** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

**Table 4: Determinants of Female Labour Force Participation, 2005/06**

| | Model1: Any job | Model2: Any paid job | Model3: Wage job |
|---|---|---|---|
| Number of children under 16 yrs | 0.998 | 0.956*** | 0.892*** |
| | (0.012) | (0.011) | (0.026) |
| Non-labour income dummy | 0.837** | 1.032 | 1.024 |
| | (0.049) | (0.055) | (0.108) |
| Woman's Age | | | |
| 15-24 | 0.461*** | 0.409*** | 0.518* |
| | (0.052) | (0.044) | (0.132) |
| 25-34 | 1.416** | 1.312** | 1.51 |
| | (0.154) | (0.123) | (0.334) |
| 35-44 | 2.021*** | 1.785*** | 1.707* |
| | (0.23) | (0.17) | (0.379) |
| 45-54 | 1.951*** | 1.735*** | 1.649* |
| | (0.223) | (0.166) | (0.367) |
| Woman's education | | | |
| Primary | 1.009 | 1.287*** | 3.072*** |
| | (0.064) | (0.078) | (0.367) |
| Secondary | 1.018 | 1.668*** | 11.13*** |
| | (0.107) | (0.181) | (1.581) |
| Woman's marital status | | | |
| Married/Cohabiting | 3.350*** | 3.638*** | 0.783 |
| | (0.242) | (0.296) | (0.117) |
| Widowed | 2.530*** | 4.996*** | 0.767 |
| | (0.339) | (0.635) | (0.205) |
| Separated/Divorced | 2.909*** | 5.173*** | 1.132 |
| | (0.333) | (0.573) | (0.214) |
| Woman's religion | | | |
| Christian | 1.294** | 1.381*** | 2.551** |
| | (0.114) | (0.111) | (0.768) |
| Moslem | 1.155 | 1.501*** | 2.694** |
| | (0.112) | (0.135) | (0.86) |
| Woman's ethnicity | | | |
| Akan | 1.681*** | 1.494*** | 0.689** |
| | (0.136) | (0.112) | (0.093) |
| Ewe | 1.402* | 1.935*** | 0.571 |
| | (0.216) | (0.269) | (0.175) |
| Ga | 1.011 | 1.099 | 0.686 |
| | | | (0.147) |
| | (0.152) | (0.162) | |

**Table 4: Determinants of Female Labour Force Participation, 2005/06 (Continuation)**

| | Model1: Any job | Model2: Any paid job | Model3: Wage job |
|---|---|---|---|
| Urban resident | 0.461*** | 1.525*** | 3.130*** |
| | (0.0273) | (0.0843) | (0.375) |
| Region | | | |
| Western | 0.839 | 0.772* | 1.002 |
| | (0.103) | (0.0862) | (0.202) |
| Greater Accra | 1.069 | 1.134 | 0.964 |
| | (0.143) | (0.144) | (0.184) |
| Volta | 1.259 | 1.118 | 0.791 |
| | (0.177) | (0.139) | (0.182) |
| Eastern | 1.131 | 1.127 | 0.786 |
| | (0.129) | (0.115) | (0.145) |
| Ashanti | 1.003 | 0.845 | 0.896 |
| | (0.104) | (0.0787) | (0.149) |
| Brong Ahafo | 1.12 | 0.646*** | 0.851 |
| | (0.138) | (0.0725) | (0.189) |
| Northern | 1.836*** | 0.836 | 0.561* |
| | (0.252) | (0.101) | (0.158) |
| Upper East | 0.911 | 0.650*** | 0.462* |
| | (0.125) | (0.081) | (0.148) |
| Upper West | 1.575** | 0.123*** | 1.345 |
| | (0.221) | (0.018) | (0.352) |
| Observations | 10294 | 10294 | 10294 |

*Source:* Authors' calculations based on data from the GLSS3 and GLSS5.
*Note:* We report the odds ratios and robust standards errors in parentheses.
*** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Tables A2 and A3 in the Appendix report results where we redefine the fertility variable to now indicate the presence of children less than six years in the home. The objective is to investigate whether the results obtained is sensitive to the definition of the fertility variable; i.e., does the presence of a child under six years have a different effect on the labour force participation from the number of children less than sixteen years? Overall, the results remain robust to this change in definition. The results in Tables A2 and A3 are consistent with our previous findings, particularly in 2005/06, that education is strongly and positively correlated with female labour force participation while the presence of young children the home negatively affects a woman's propensity to participate in market work.

## 6. Conclusion

The empirical analysis presented in this paper complements the literature by investigating the determinants of female labour force participation in Ghana and the relative roles of female education and fertility. Our analysis has allowed us to elucidate the relationship between education and fertility on the one hand, and a woman's labour market participation decision, on the other. The results of the analysis lead to the conclusion that both women's educational attainments as well as fertility determine female labour force participation in Ghana. Our findings indicate that the presence of children at home significantly reduces participation in wage employment. With regards to education, as the human capital theorists hypothesize, our study confirms a strong positive relationship between education (particularly, after completing basic primary education) and labour force participation. Women with primary school education or above were more economically active than those with no education. The longer years of education increased the likelihood of women's labor force participation.

The relatively low levels of female labour force participation in Ghana are inconsistent with equity and efficiency goals and may be impacting negatively on economic performance. This issue requires prompt attention of policy makers. Labor market policies, programs and initiatives may be developed to improve the situation and promote labour market participation of women. The policy implication of our finding of a strong positive association between education and female labor force participation rates is that the policy makers should concentrate on increasing female education levels in order to increase in the role of women in the labor market in the coming years. In addition, the finding of a statistically significant negative relationship between the presence of children and female labour force participation suggests that government and the private sector must find ways to increase mothers' access to child care facilities in order to alleviate the limiting effect of child care on women's participation in wage employment.

**References**


Anker, R. (1998), "Gender and Jobs: Sex Segregation of Occupations in the World", (Geneva, ILO).

Bauer, John and Young-Soo Shin (1987), "Female labor force participation and wages in the Republic of Korea." Paper presented at the annual meetings of Population Association of America, East-West Population Institute.

Becker, G. S. (1992). The Economic Way of Looking at Life, Nobel lecture, Department of Economics, University of Chicago, Ill. 60637, USA.

Becker, G.S. (1960), "An Economic Analysis of Fertility," in Demographic and Economic Change in Developed Countries, Princeton, NJ, Princeton University Press.

Ben-Porath, Y. 1973. "Labour-force participation rates and the supply of labor". *Journal of Political Economy*, 81: 697–704.

Bindary, Aziz, Colin B. Baxter, and T. H. Hollingsworth (1973), "Urban-Rural Differences in the Relationship between Women's Employment and Fertility: A Preliminary Study." *Journal of Biosocial Science* 5:159-67.

Blundell, R and McCurdy, T (1999), "Labour Supply a review of Alternative approaches", *The Institute for Fiscal Studies Working Paper Series* No. W98/18.

Bowen, William G. and T. Adrich Finegan (1969), *The Economics of Labor Force Participation*. Princeton, NJ: Princeton University Press.

Brander, J. A. and S. Dowrick (1994). "The Role of Fertility and Population in Economic Growth." Journal of Population Economics **7**(1): 1-25.

Cagatay, Nilufer, and Sule Ozler (1995), "Feminization of the Labor Force: The Effects of Long-term Development and Structural Adjustment." *World Development* 23:1883-94.

Cain, Glen G. (1966), Married *Women in the Labor Force: An Economic Analysis*. Chicago: University of Chicago Press

Chant, Sylvia (2002), "Researching Gender, Families, and Households in Latin America: From the Twentieth into the Twenty-first Century." *Bulletin of Latin American Research* 21:545-75.

Cochrane, S. (1979). *Fertility and Education. What do We Really Know?* Baltimore: Johns Hopkins University Press.

Cohen B. (1998), "The Emerging Fertility Transition in Sub-Saharan Africa", *World Development,* 26(8), 1431-1461.

Goldstein, Sidney (1972), "The Influence of Labour Force Participation and Education of Fertility in Thailand." *Population Studies* 26:419-36.

Gronau, R. (1977), "Leisure, Home Production, and Work - the Theory of the Allocation of Time Revisited," *Journal of Political Economy*, 85, 1099-1123.

Harrison, A. (2005), "Globalization and Poverty". University of California at Berkeley and NBER, mimeo.

Heckman, James (1980), *Female Labor Supply: Theory and Estimation*. Princeton, NJ: Princeton University Press.

Isvan, Nilufer A. (1991), "Productive and Reproductive Decisions in Turkey: The Role of Domestic Bargaining." *Journal of Marriage and the Family* 53:1057-70.

Kalwij, A.S. 2000. "The Effects of Female Employment Status on the Presence and Number of children." *Population Economics* 13: 221-239.

Korinek, Kim Marie (2004), "Maternal Employment during Northern Vietnam's Era of Market Reform", *Social Forces*, volume 83, number 2, December 2004, pp. 791-822.

Krueger, A. (1983), *Trade and Employment in Developing Countries*, vol. 3: Synthesis and Conclusions, University of Chicago Press.

Long, Clarence D. (1958), *The Labor Force under Changing Income and Employment*. National Bureau of Economic Research, Princeton, NJ: Princeton University Press.

Mason, Karen Oppenheim, and V.T. Palan. 1981. "Female Employment and Fertility in Peninsular Malaysia: The Maternal Role Incompatibility Hypothesis Reconsidered." *Demography* 18:549-75.

Mincer, J. (1963), "Opportunity Costs and Income Effects," in Measurement in Economics, (ed.) C.Christ, et al., Stanford, CA: Stanford University Press.Montgomery, M. R. and J. B. Casterline. 1996. "Social learning, social influence and new models of fertility." *Population and Development Review* 22:151-175.

Mincer, J (1962), Labour Force Participation of Married Women; in H.G Lewis ed. Aspects of Labour Economics, National Bureau of Economic research, Princeton N.J Princeton University Press.

Murray, P. & Syed, J. (2007), "Observations through gendered lenses: experiences of managerial women." In E. Davis & V. Pratt (Eds), *Making the Link: Affirmative Action and Employment Relations*. Sydney: CCH Australia Limited, 18: 38-44.

Nam, Sunghee (1991), Determinants of Female Labour Force Participation: A Study of Seoul, South Korea, 1970-1980", *Sociological Forum*, Vol. 6, No. 4, pp. 641-659.

Rosenzweig, M.R and Wolpin, K.I (1980) .Life Cycle Labour Supply and Fertility Causal Inferences from Household Models., *Journal of Political Economy*, volume 88, pp 328-348.

Schultz, T.P, (1990), "Women's Changing Participation in the Labour Force: A World Perspective." *Economic Development and Cultural Change.* Vol. 38 pp 457-88.

Sprague, A. 1988. "Post-war fertility and female labour force participation rates". *The Economic Journal*, 98(392): 682–700.
Standing, Guy (1976), "Effects of Children on Female Labor Supply-A Counter-example in Rural Thailand". Geneva: International Labour Office.

Standing, Guy (1981), "Labour Force Participation and Development." Geneva: International Labour Office.

Standing, Guy (1999), *Global Labour Flexibility: Seeking Distributive Justice* (New York, St. Martin's Press).

Troske, Kenneth R. and Alexandru Voicu (2009), "The Effect of Children on the Level of Labor Market Involvement of Married Women: What is the Role of Education?, *IZA Discussion Paper* No. 4074.

Waldfogel, J. (1998), "Understanding the "Family Gap" in Pay for Women with Children," *Journal of Economic Perspectives*, 12(1), 137-56.

Willis, R. 1973. "A New Approach to the Economic Theory of Fertility Behaviour". *Journal of Political Economy*, 81(S): 14–64.

# Appendix

## Table A1: Variable Definitions

| Variable type and name | Operational definition |
|---|---|
| ***Dependent variables:*** | |
| Participate in any market activity | Dummy variable coded 1 if respondent was active in any market activity, paid or unpaid; else 0 |
| Participate in wage & non-agric self-employment | Dummy variable coded 1 if respondent was active in paid market activity; else 0 |
| Participate in wage employment | Dummy variable coded 1 if respondent was employee in a wage activity; else 0 |
| ***Control variables:*** | |
| Woman's Age | A set of dummy variables capturing the following age categories: |
| 15-24 | Age between 15 and 24 |
| 25-34 | Age between 25 and 34 |
| 35-44 | Age between 35 and 44 |
| 45-54 | Age between 45 and 54 |
| 55-64 | Age between 55 and 64 (reference category) |
| Woman's education | A set of dummy variables capturing the following categories: |
| None | No education (reference category) |
| Primary | Completed primary education |
| Secondary | Completed secondary education |
| Fertility | A set of variables capturing respondent's fertility: |
| Number of children born alive | Number of children ever born alive to respondent |
| Number of children under 16 years | Number of children under 16 years present at home |
| Presence of child under 6 in household | Dummy variable = 1 if child under 6 is present at home; esle 0 |
| Woman's marital status | A set of dummy variables capturing the following categories: |
| Single | Single (reference category) |
| Married or Cohabiting | Married and Co-habiting |
| Widowed | Widowed |
| Separated or Divorced | Separated or Divorced |
| Woman's ethnicity | A set of dummy variables capturing the following categories: |
| Akan | Akan |
| Ewe | Ewe |
| Ga | Ga |
| Other | Other ethnic group (reference category) |
| Woman's religion | A set of dummy variables capturing the following categories: |
| Christian | Christian |
| Moslem | Moslem |
| Other | Other religion (reference category) |
| Urban resident | Dummy variable coded 1 if respondent resides in urban locality |
| Non-labour income dummy | Dummy coded 1 if respondent's household receives remittances |

**Table A2: Determinants of Labour Force Participation, 1991/92**

| | Model1: Any job | Model2: Any paid job | Model3: Wage job |
|---|---|---|---|
| Presence of child under 6 yrs | 1.259* | 1.046 | 0.797 |
| | (0.117) | (0.080) | (0.101) |
| Non-labour income dummy | 1.341** | 1.131 | 0.918 |
| | (0.12) | (0.078) | (0.108) |
| Woman's Age | | | |
| 15-24 | 0.714 | 0.417*** | 0.733 |
| | (0.146) | (0.066) | (0.258) |
| 25-34 | 2.402*** | 1.06 | 1.598 |
| | (0.491) | (0.157) | (0.503) |
| 35-44 | 3.740*** | 1.325 | 1.714 |
| | (0.844) | (0.199) | (0.539) |
| 45-54 | 2.434*** | 1.262 | 1.516 |
| | (0.507) | (0.185) | (0.484) |
| Woman's education | | | |
| Primary | 0.972 | 1.565*** | 4.211*** |
| | (0.101) | (0.139) | (0.587) |
| Secondary | 0.95 | 1.708* | 17.43*** |
| | (0.209) | (0.365) | (3.779) |
| Woman's marital status | | | |
| Married/Cohabiting | 4.039*** | 5.803*** | 1.696* |
| | (0.504) | (0.695) | (0.364) |
| Widowed | 1.877** | 11.81*** | 2.028* |
| | (0.437) | (2.347) | (0.724) |
| Separated/Divorced | 3.168*** | 10.48*** | 1.996** |
| | (0.603) | (1.669) | (0.523) |
| Woman's religion | | | |
| Christian | 1.025 | 1.034 | 1.777** |
| | (0.13) | (0.093) | (0.383) |
| Moslem | 1.427* | 1.746*** | 2.061** |
| | (0.252) | (0.211) | (0.569) |
| Woman's ethnicity | | | |
| Akan | 0.883 | 1.289* | 1.245 |
| | (0.126) | (0.133) | (0.259) |
| Ewe | 0.711 | 1.167 | 1.372 |
| | (0.133) | (0.171) | (0.359) |
| Ga | 0.851 | 1.219 | 1.980** |
| | (0.169) | (0.196) | (0.508) |
| Urban resident | 0.215*** | 1.719*** | 3.021*** |

| | | | |
|---|---|---|---|
| | (0.021) | (0.135) | (0.406) |
| Region | | | |
| Western | 0.738 | 1.295 | 0.865 |
| | (0.149) | (0.191) | (0.24) |
| Greater Accra | 0.768 | 1.517* | 0.785 |
| | (0.156) | (0.263) | (0.202) |
| Eastern | 0.656* | 1.312* | 0.918 |
| | (0.11) | (0.166) | (0.194) |
| Volta | 1.04 | 2.396*** | 1.441 |
| | (0.239) | (0.425) | (0.42) |
| Ashanti | 0.724* | 0.868 | 0.805 |
| | (0.118) | (0.106) | (0.172) |
| Brong Ahafo | 1.387 | 0.861 | 1.059 |
| | (0.29) | (0.123) | (0.281) |
| Northern | 0.570* | 0.428*** | 1.405 |
| | (0.131) | (0.073) | (0.466) |
| Upper West | 0.727 | 0.336*** | 0.956 |
| | (0.23) | (0.072) | (0.477) |
| Upper East | 1.339 | 0.175*** | 0.571 |
| | (0.45) | (0.035) | (0.324) |
| Observations | 5271 | 5271 | 5271 |

*Source:* Authors' calculations based on data from the GLSS3 and GLSS5.
*Note:* We report the odds ratios and robust standards errors in parentheses.
*** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

**Table A3: Determinants of Labour Force Participation, 2005/06**

| | Model1: Any job | Model2: Any paid job | Model3: Wage job |
|---|---|---|---|
| Presence of child under 6 yrs | 1.014 | 0.815*** | 0.741** |
| | (0.056) | (0.043) | (0.077) |
| Non-labour income dummy | 0.837** | 1.031 | 1.028 |
| | (0.049) | (0.055) | (0.108) |
| Woman's Age | | | |
| 15-24 | 0.457*** | 0.439*** | 0.535* |
| | (0.053) | (0.048) | (0.14) |
| 25-34 | 1.405** | 1.377*** | 1.598* |
| | (0.156) | (0.133) | (0.361) |
| 35-44 | 2.008*** | 1.777*** | 1.640* |
| | (0.228) | (0.169) | (0.364) |
| 45-54 | 1.948*** | 1.706*** | 1.594* |
| | (0.223) | (0.163) | (0.355) |
| Woman's education | | | |
| Primary | 1.010 | 1.297*** | 3.155*** |
| | (0.063) | (0.078) | (0.376) |
| Secondary | 1.021 | 1.679*** | 11.47*** |
| | (0.107) | (0.182) | (1.624) |
| Woman's marital status | | | |
| Married/Cohabiting | 3.334*** | 3.949*** | 0.832 |
| | (0.251) | (0.335) | (0.131) |
| Widowed | 2.521*** | 5.496*** | 0.833 |
| | (0.34) | (0.709) | (0.226) |
| Separated/Divorced | 2.901*** | 5.665*** | 1.246 |
| | (0.334) | (0.635) | (0.24) |
| Woman's religion | | | |
| Christian | 1.294** | 1.402*** | 2.618** |
| | (0.114) | (0.113) | (0.788) |
| Moslem | 1.153 | 1.515*** | 2.687** |
| | (0.112) | (0.136) | (0.855) |
| Woman's ethnicity | | | |
| Akan | 1.681*** | 1.487*** | 0.687** |
| | (0.136) | (0.112) | (0.092) |

| | | | |
|---|---|---|---|
| Ewe | 1.403* | 1.953*** | 0.575 |
| | (0.216) | (0.272) | (0.176) |
| Ga | 1.012 | 1.081 | 0.675 |
| | (0.152) | (0.159) | (0.145) |
| Urban resident | 0.463*** | 1.539*** | 3.242*** |
| | (0.027) | (0.085) | (0.388) |
| Region | | | |
| Western | 0.839 | 0.770* | 0.984 |
| | (0.103) | (0.086) | (0.198) |
| Greater Accra | 1.07 | 1.126 | 0.961 |
| | (0.143) | (0.143) | (0.183) |
| Volta | 1.258 | 1.112 | 0.783 |
| | (0.177) | (0.139) | (0.179) |
| Eastern | 1.131 | 1.125 | 0.779 |
| | (0.129) | (0.115) | (0.144) |
| Ashanti | 1.003 | 0.843 | 0.882 |
| | (0.104) | (0.078) | (0.147) |
| Brong Ahafo | 1.119 | 0.645*** | 0.837 |
| | (0.138) | (0.072) | (0.186) |
| Northern | 1.833*** | 0.820 | 0.549* |
| | (0.252) | (0.099) | (0.153) |
| Upper East | 0.91 | 0.640*** | 0.459* |
| | (0.125) | (0.079) | (0.146) |
| Upper West | 1.569** | 0.119*** | 1.249 |
| | (0.219) | (0.017) | (0.326) |
| Observations | 10294 | 10294 | 10294 |

*Source:* Authors' calculations based on data from the GLSS3 and GLSS5.
*Note:* We report the odds ratios and robust standards errors in parentheses.
*** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.