

Determinants of Economically Active Children in Ghana

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Abstract: The study examines the determinants of economically active children between the ages of 5-14-years in Ghana using data from the 2012/2013 Ghana Living Standards Survey. The regional and occupational distribution as well as the gender dimensions of economically active children in Ghana are examined in the study. Using a probit model the paper finds out that variables such as mother's presence in the household, child's educational status, father's education, household's ownership of land, urban-rural residence, religion and regional dummies significantly influence the occurrence of child work. However, variables such as the gender of the child, father's presence in the household and the education of the mother were insignificant in determining child work. The study could not establish the evidence that supports the gender gap in the literature that boys are more economically active than girls as the results from the probit estimates suggest the gender of the child is insignificant in determining economically active children.

Keywords: Child labour, child work and economically active children.

I. Introduction

A dominant group of the Ghanaian labour force is economically active children. Economically active children are found across all the regions and various sectors of employment in Ghana. The working definition for economically active children for this study is represented in the 2012/2013 GLSS Labour Force Report as "children (5-14 years) who were engaged in any activity or work for pay (in cash or in-kind), profit or for family gain, for at least one hour in the seven days preceding the interview". Two reference periods which are, last 7 days and last 12 months, are used in the GLSS 6. Such children find themselves in one sort of work or the other in the formal or informal sector, within or outside the household. Such work may include trade, roadside selling, agriculture, fishing, craft, mining, construction, food service activities and household enterprises.

Most studies use the term child labour to refer to the deleterious aspect of child work. According to Moyi (2011), the physical and sexual exploitation of children, long working hours, and low wages make up child labour. For Edmonds and Pavcnik (2005), the abusive use of children in hazardous work under severe conditions forms child labour. Galbi (1997) explains that any given work which prevents children from schooling and also negatively affects the health of children is child labour. Child labour simply means work that harms children or prevents children from being punctual at school. It is when persons who are below 15 years of age work, which may be inimical to their human development (ILO, 2010). Sometimes children may be required

to combine schooling and working, be compelled to stop schooling in order to work or they may be seriously affected health wise such as in the case of minor and compounded headache, injuries and other health challenges arising from the effects of the work they do, all of which are regarded as child labour.

The general assumption that all child work is detrimental may not be the case. For instance, a child below 13 years may be engaged in a work that is beneficial but it may be referred to as child labour because it violates the minimum age requirement for employment. The various work children engage in may be helpful or harmful based on the nature of the work and the welfare implications of the work, some of which may not be detrimental. Worst forms of child labour include illegal work like prostitution, trade in drugs and child soldiers.

II. Background

The issue of children engaging in economic activities is not a recent development. Significant focus has been given to child workers all through the history of economics (Edmonds, 2007). Most of the early studies on child work in economics tackled child work from the perspective of demand for labour. Adam Smith stressed that children are useful in communities with insufficient labour. This, therefore, stimulates parents in such communities to give birth to more children to add up to their labour force. Karl Marx, a renowned German economist and a philosopher posited that the industrial revolution brought forth child work. He further elucidated that the transition from manpower to machines in several production and manufacturing processes made manpower less needed. Therefore children were readily trained and employed to operate machines in various occupations. Malthus contended that the resultant effect of families not being able to provide their basic needs in the late 18th century is the prevalence of child labour(Edmonds, 2007).

The minimum working age is set at 15 years by International Labour Regulations (ILO, 2010; The Children's Act (Act 560), 1998). According to the International Labour Organization's Convention on the minimum age for employment, any economic activity which has the potential of destroying children's mental, physical or moral health and safety must be done by adults aged 18 years and above. A child below the age for completing compulsory schooling (15 years) must not be employed to work. Nevertheless, light work is permitted among children of the ages 13 years to 15 years on the condition that the work will not in any way be detrimental to the health, safety and schooling of the children (ILO, 2010). This means that those children who are below 13 years of age must not participate in economic activities. The study focuses on child work and it examines the determinants of factors that influence the occurrence of child work among 5-14-year-olds and the welfare implications of child work on adults who worked during their childhood.

Child work as a concept is broader which has child labour as a subset. Children are engaged in numerous activities across the world which varies among countries, cultures, societies and gender. However, it is not every work a child below 14 years does that can be said to be child labour according to the International Labour Standards. There are several exceptions which comprise of family activities or duties and monitored training of children. These activities may not be regarded as child labour but those children can be referred to as being economically active. Most culture deems it worthwhile for children to be trained in one skill or the other in order for them to be responsible in the future. Therefore children may be coached in petty trading, farming practices, family businesses or handicrafts. Nevertheless, the training of children to be economically active can turn into child labour when children are forced to do strenuous work, or when children work for long hours which may cause harm to them through injuries and health complications or impede their regular and active participation in schooling.

A common economic activity of children in Ghana is the brisk business done by children who take advantage of the toll booth and the usual vehicular traffic to sell sachet water, fruits, plantain chips, and sweets to travelers and motorists. Even more disheartening is the fact that some parents force their children into this kind of work, caring less about the safety and future of these children. Unfortunately, most of these children have very little

time to study after school, which affects their academic performance. Such children may eventually drop out of school and become full-time child labourers.

According to the Ghana Living Standards Survey 6 Labour Force Report, 31.1 percent of the survey population was made up of 5-14 years old children. The economically active children captured 25.2 percent. Girls within the age range of 5-14 years who live in the rural areas have a greater likelihood of being economically active than girls of the same age range in the urban areas.

The welfare effects of 5-14-year-old children who are involved in various sort of work make it somewhat surprising as to why certain parents usher their children of such tender and vulnerable age into work. Grootaert and Kanbur (1995) explain that poor parents push their children into early work as a means of survival for the family. According to Basu and Van (1998), unselfish parents due to severe economic hardship can be coerced to use their children as a money making instrument in spite of the fact that they really are concerned about the safety, health and happiness of their children. Ahmed (1999) posits, "There is by now a virtually unanimous view that poverty is the main, although not the only causes of child labour."

Severe poverty might however not cause parents to send 5-14-year-old children to work for long hours. Nevertheless, when short-term financial and economic hardships occur, extra income earned from children who are working is useful to the family for upkeep. Unfortunately, what commenced as a short-term work may end up as a permanent work when the parents of the children focus more on the flow of income from the children's work or when the early exposure to work and petty income earnings cause children to be disinterested in schooling.

A critical assessment of the effect of age at first work on the income level of individuals later in life and on the educational attainment of individuals who engaged in child work is undertaken by the study.

The study on a whole focuses on economically active children who engage in child work.

2.1 Economic and non-economic activities of children in Ghana

Economically active children are defined for the purpose of this study as children who are below 15 years of age and are into one sort of work or the other for wages, profit, to benefit the family or to receive non-monetary rewards. Most children do menial work to earn little incomes to support themselves and their families. The economic activities children engage in include diverse agricultural activities, fishing, craft, operating machines in manufacturing industries, working in factories, arranging bricks and blocks in construction work, food services, selling several items such as sachet water, toffees, biscuits, plantain chips, handkerchief, and most consumable as well as non-consumable items (GLSS 6 Labour Force Report, 2014).

Certain numbers of children are unemployed or not active economically. However, these children may be engaged in several activities which are equally important for the everyday upkeep of their families. Those activities are referred to as housekeeping activities, which are non-economic activities because they do not yield any form of direct income or non-income payments. Those activities include fetching water, gathering firewood, washing and ironing clothes, running errands, washing dishes, sweeping the compound of the house, collecting food from the garden, taking care of the elderly, and their younger siblings.

From table 2.1 below, 31.1 percent of the 2012/2013 GLSS population was made up of 5-14 years old children. Economically active children captured 25.2 percent. 95.8 percent of the economically active children were working children involved in one form of economic activity or the other and 72.5 percent were economically inactive. Girls within the age range of 5-14 years who live in the rural areas have a higher likelihood to be involved in economic activities than girls of the same age range in the urban areas.

Table 2.1: Current activity status of population 5 – 14 years by locality and sex

Activity status	All			Urban			Rural		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Population 5-14	31.1	33.2	29.2	28.1	30.0	26.4	33.9	36.0	31.8
Currently active	25.2	25.5	24.9	14.8	13.6	15.9	34.4	35.4	33.4
Employed	95.8	95.5	96.1	96.2	95.7	96.7	95.6	95.5	95.8
Unemployed	4.2	4.5	3.9	3.8	4.3	3.3	4.4	4.5	4.2
Currently inactive	72.5	72.3	72.8	85.2	86.4	84.1	62.5	61.4	

Source: Ghana Statistical Service (2012)

2.2 Causes of Economically Active Children

It is a common ideology that parents who are very poor usually usher their children into economic activities in order to earn income which is useful for the subsistence of the family. Poverty is a major reason for children being forced into economic activities. "Poverty is what causes child labour" as proposed by Edmonds (2007). Basu and Van (1998) posit that poverty among parents is the fundamental cause of children engaging in economic activities. In view of this, they made a strong case against enacting laws to prohibit children from being economically active. According to Basu and Van, the prohibition of children from active work should be enacted only when it will result in increases in adult wages so as to ensure that poor parents work and earn sufficient incomes to cater for their families. Therefore, there will be no need for their children to work to earn extra income. Economic activities of children become critical in reducing the effects of potential job loss, a decline in family's income and inadequate parental earnings which are not enough to warrant family survival as analysed by Galbi (1997).

The level of family or household wealth also influences child work. Parents usually spearhead decisions on whether their children should be active in schooling or in economic activities. Families who live below the poverty line may not be able to finance all the expenses involved in enrolling their children in school. These expenses include school fees, studies fees, feeding fees, transport fares if only the child stays far away from the school, buying school uniforms, textbooks, exercise books, pens and pencils. When the income of the family is below the upkeep level, children in such households are treated as potential persons who must support the family to survive by engaging in one economic activity or the other. In effect, poor families who cannot cater for the education of their children may be left with no other option than to introduce their children to economic activities.

Family size is another factor that may lead children from low-income households into economic activities. Large households which are poor normally have lots of children participating in economic activities as compared to small households which are also poor, which indicates that the size of the family affects the economic activities of children. Because parents find it difficult to meet the demands of a large family size, they may compel their children to work in order to make ends meet for the family.

However, within the family, not every child is allowed to be economically active. The age and gender disparities of children influence children's economic activities. For instance, in certain rural setting, boys have a higher likelihood to go to school than girls. Okpukpara and Odurukwe (2006) observed that there was a higher

likelihood of younger siblings to attend school than older siblings and also boys have higher school attendance than girls.

A critical and an unfortunate cause of economically active children is the death of the breadwinner of the family. An increasing number of children are coerced to be economically active so as to earn income to ensure the upkeep of themselves and their siblings when either or both of their parents die.

Parents who had early child work experiences may also influence child work. Aqil (2012) proposes that parents who worked when they were children have a higher likelihood of allowing their children to work as well, thus making child work a generational practice. In effect, individuals who work during their childhood turn out to be low-skilled and uneducated at adulthood. Hence the education of the parents plays a key role in the education of the children because it can enhance the likelihood of a child obtaining good education as explained by Aqil (2012). According to Fasih (2007), child work produces uneducated and unskilled labour which affects the development of a country in the long-run.

III. Theoretical Framework of Economically Active Children

3.1 The Bargaining Model

In order to explain the theoretical underpinnings of economically active children or child work, how the household behaviour is modelled which is closely linked to the formal study of child work is considered. Early studies by Rosenzweig and Evenson (1977) and Goldin (1979) used the model of bargaining of how households make decisions to concurrently explain decisions on household consumption and child work. Child work is explained by bargaining model.

There are two forms of the bargaining model by virtue of who the bargaining agents are. They are the Intra-Household Bargaining Model which has the child and parent in the family as the bargaining agents and the Extra-Household Bargaining Model which has the child's parents and the employer as the agents engaged in bargaining.

3.2 The Intra-Household Bargaining Model

Becker (1985) proposed that in the traditional household model, referred to as the unitary model, the household is regarded as one entity that makes decisions. The unitary model is valid if a household has one person who makes all the decisions on all matters of the household or if the utility function of all persons in the household are the same. Nevertheless, evidence abounds to show that the decision making in the household depends on household members' earnings and contribution to the household income (Strauss and Thomas, 1995). Thus, the household is a decision-making unit which is not without conflict, but it is a bargaining arena where the income contribution of an individual to the household depicts the individual's bargaining power (Grootaert and Kanbur, 1995).

Moehling (1999) used this model by clearly taking notice of child work. For simplicity, an assumption is made that a household is made up of a parent who is the 1st agent and a child who is the 2nd agent. With the assumption that an economy has just one good (x) and agent i consumes x_i . Another assumption of the Moehling model is that the agents of the household care about the consumption of other household members because the consumption pattern of one member in the household affects the consumption pattern of the other members. u_i is the utility function of person i .

The utility function of the household is a weighted mean of u_1 and u_2 , where the weight tied to the utility of the parent given as (α) , is dependent on the parent and child's income represented as y_1 and y_2 respectively. The weight of the child is given as $1 - \alpha$. Stated differently, in terms of the utility function of the household the amount of income generated for the household informs the amount of weight one obtains. Thus greater weight is

assigned to income generated and smaller weight is assigned to leisure and other non-income generating ventures. Therefore the decision problem of the household can be stated in a collective model as:

$$\text{Max } \alpha(y_1, y_2)u_1(x_1, x_2) + [1 - \alpha((y_1, y_2)u_2(x_1, x_2))]$$

Subject to $x_1 + x_2 \leq y_1 + y_2$.

The assumptions are that:

$$\frac{\partial \alpha}{\partial y_1} \geq 0, \frac{\partial \alpha}{\partial y_2} \leq 0, \frac{\partial u_1}{\partial x_1} > 0, \frac{\partial u_2}{\partial x_2} > 0, \frac{\partial u_1}{\partial x_2} \geq 0, \frac{\partial u_2}{\partial x_1} \geq 0$$

Where $0 \leq \alpha \leq 1$

Moehling (1999) used a household data from urban America to estimate this model and observed that children who work obtain a greater share of the resources of the household compared to children who are not working.

In order to use this model to also explain the involvement of a child in work, it is admitted that households make use of goods and services as well as leisure. To make matters simple, the assumption is made that the adults in the household work. If child work is given as "e", where "e" is categorised as [0, 1] then the leisure consumed by a child is $1-e$.

With the inclusion of child work, the utility of each person is a function of x_1, x_2 and e . This extends the initial model to what is called the "collective maximisation problem" which represents the new problem of decision making in the household. It is given as:

$$\text{Max } \alpha(y_1, y_2)u_1(x_1, x_2, e) + [1 - \alpha((y_1, y_2)u_2(x_1, x_2, e))]$$

Subject to $x_1 + x_2 \leq y_1 + y_2$.

This utility maximisation problem of the household may look simpler at a glance but it is a sophisticated household problem. This is because the income of the child y_2 is influenced by the kind of work a child does. Therefore it is not straight forward to regard y_2 as an exogenous variable.

This problem can be solved by treating the weight tied to the parent's utility which is α , as a price vector as explained by Browning, Bourguignon et al. (1994). Because wage rate is a price, α now becomes a function of the adult and child wage rate (w_1 and w_2) but not a function of y_1 and y_2 . This alters the budget constraint to:

$$x_1 + x_2 \leq w_1 + ew_2$$

With this, there is a non-complicated optimisation without the problem of simultaneity. This implies that the bargaining power of a person in a household is not dependent on the share of income a person contributes to the household but on the wage a person earns.

Maximising the household utility function subject to the budget constraint yields an expression for child work or labour supply as:

$$e^* = e^*(y_1, w)$$

This means that child work (e^*) is determined by the adult wage (y_1) and child wage on the labour market. If the adult wage is below the level of subsistence of a household, a child may be ushered into economic activities to

earn income to support the household upkeep. This supports the luxury axiom by Basu and Van (1998) which explains that children engage in economic activities when the incomes of the household and the incomes from other sources with the exception of child labour sources, are low.

Basu (1999) proposes that a complex model with several explanatory variables can be developed. This study seeks to add more exogenous variables to the simple child work supply function above and to find out the empirical implications of the new model and also to test the significance of the exogenous variables to child work.

IV. .Some Empirical Studies on Child work in Ghana

There have been strong disagreements recently in the literature in terms of what policy direction to implement in relation to child labour. This controversy has the role of poverty as its central idea as observed in the most theoretical literature. Canagarajah and Coulombe (1997) challenge the proposition that poverty is the main cause child labour. They assert that the main originator of child labour is not poverty. However, poverty could have an unintended influence on child labour through sub-standard education which affects children. Nevertheless, Blunch and Verner (2001) reaffirm that the principal cause of child labour in Ghana is poverty.

Canagarajah and Coulombe (1997) used the first three rounds of the Ghana Living Standards Survey (GLSS) to evaluate what determines child work and schooling decision among 7-14-year-old children in Ghana. They used bivariate probit models with different specifications to establish the findings that child work and schooling have a significant inverse relationship. This implies that when demand for child education is increased, the incidence of child work will reduce. Also, father's education is negatively related to child work with a stronger effect on girls than boys. Thus parental literacy reduces child work. Moreover, household characteristics were observed to have great influence on decisions of child work or schooling. For instance, there was a significant negative influence on the education of the father on child work, with the influence being greater for girls compared to boys. Another finding was that there was a positive but reducing effect of log per capita total expenditure on child work. They further concluded that poverty is not the main cause of child work, using the income level of the household to measure poverty.

Canagarajah and Coulombe (1997) allowed for the endogeneity of income status. Just as the income of the household is anticipated to have a negative effect on child work, similarly, a reversal positive effect may occur as child work yields wages which add up to household income as explained by Bhalotra and Tzannatos (2003). Because of the multidimensional nature of poverty, it can be measured from a different perspective apart from using income level of the household as a measure of poverty, which is accompanied with the problem of endogeneity.

Unlike Canagarajah and Coulombe (1997) who questioned the main causality of child labour which is poverty, Blunch and Verner (2001) re-affirmed that poverty and child work are positively linked. They began with the proposition that, child labour necessarily is not harmful. They found that poverty is linked to the evidenced gender gap in child labour which is skewed towards girls.

Blunch and Verner (2001) revisit the relationship between child work and poverty in Ghana by focusing on a univariate probit model to estimate child work only. "Core Welfare Indicator Questionnaire" (CWIQ) data from Ghana in 1997 was used. They re-emphasize the negative relationship between child work and poverty. Because the popular view that poverty is the main cause of child work has been challenged by current research, they began from the proposition that child work may not always be harmful. By concentrating on child work that directly affects the accumulation of children's human capital, they identified that girls are the most vulnerable group. They found out that as a result of a cultural norm rather than discrimination, gender gap with respect to child work is related to poverty. Also, girls in both rural and urban areas have a higher likelihood to engage in harmful labour than boys.

Ray (2002) examines the GLSS 1988/1989 data for Ghana with the aim of finding the determinants of child labour. Ray concentrated on household poverty as a possible cause of child labour, bearing in mind the Luxury Axiom by Basu and Van (1998). Child schooling, poverty and child labour are estimated using simultaneous equations, controlling for the endogeneity that exists between them. Also, the two-stage Heckman estimation procedure was used in estimating the determinants of child labour. The finding was that household poverty was not the primary cause of child work. The explanation for the finding was that in poorer communities there are fewer employment opportunities for children. Variables such as parent's educational level and access to quality school in the community were found to have a significant impact on the hours of work of children. Ray (2002) proposed that policies which seek to increase children's schooling and enhance the quality of schools would motivate parents to decide to educate their children rather than making them work.

What makes Ray's study different from that of Canagarajah and Coulombe (1997) and Blunch and Verner (2001) is that Ray (2002) corrected for endogeneity by deducting the contribution of the child to the household income from the total household income. There are two challenges with this approach. The first challenge is that it is not every economic activity of children that earns direct wages or income. Children who work on household farms and in other household businesses may not be paid in cash as is common in most developing countries as elucidated by Bhalotra and Tzannatos (2003). Therefore in such a situation, it is difficult to estimate child income in order to subtract it from household's income to correct for endogeneity. The second challenge is that, even if the estimates of child income are made and deducted from the total household income, the income of adults is endogenous in that adult and child labour supply are determined jointly as explained by Bhalotra and Heady (2000).

Boozer and Suri (2001) explored the preferences involved in child labour and schooling hours trade-off, excluding child work in the household. The GLSS for 1988/1989 from the World Bank was used for their study. They used the differences in regional rainfall trend as their source of exogenous differences in child labour. The Ordinary Least Squares regression was used to estimate the interrelation between hours of schooling and child labour. The findings were that by accounting for the differences in regional effects due to the different climatic trends in the Northern and Southern Ghana by month, a significant trade-off exists between schooling and child labour. Also, an hour increase in child labour causes a decline in hours of schooling by 0.38 or 38 minutes.

V. Methodology

5.1 Data Type, Source and Definition

This study makes use of secondary data for its analysis. The data is obtained from the 2012/2013 Ghana Living Standards Survey Round Six (GLSS 6). What makes the GLSS 6 unique is that it has a particular focus on labour force which is further widened to make room for a section on Child Labour. GLSS data sets are mainly collected to better appreciate poverty and household welfare levels in Ghana.

5.2 The Regional Distribution of economically active children between the ages of 5-14 years in Ghana.

In estimating economically active children, children of the tender age of five years old are considered. This sounds extreme but it is very prevalent in the Ghana and the GLSS 6 reports of children of the age of five years engaged in work. Therefore for the purpose of this study only children in the age group 5-14 years were selected. Table 5.2.0 below shows the regional distribution of economically active children aged 5-14 years. It can be seen from the table that the Upper East region recorded the highest number of economically active children with a figure of 2,407 which represents 17.52 percent followed by the Upper West region with 2,103 children which also represents 15.31 percent while Greater Accra recorded the lowest figure with 252 economically active children which represents 1.83 percent. The essence of the regional distribution of children to the analysis is that it provides a good coverage of the number of economically active children found in all the parts of the country.

Table 5.2.0 Regional distribution of economically active children aged 5-14 years

REGION	FREQUENCY	PERCENT
Western	781	5.68
Central	556	4.05
Greater Accra	252	1.83
Volta	1,110	8.08
Eastern	1,933	14.07
Ashanti	1,098	7.99
BrongAhafo	1,850	13.47
Northern	1,649	12.00
Upper East	2,407	17.52
Upper West	2,103	15.31
Total	13,739	100

Source: Ghana Statistical Service, 2012/2013

5.2.1 Occupational distribution of economically active children (5-14 years) in Ghana

The distribution of economically active children in Ghana by occupation is presented in table 5.2.1. The table shows that 11,822 children between the ages of 5-14 years representing about 85.75 percent are into agriculture, forestry or fishery. The next occupation that employs more children is the sales or service work which has about 1,119 children representing about 8.12 percent. The occupation with the least child workers is the machine operator or assembling which has 21 child workers representing 0.15 percent.

Table 5.2.1 Employed children 5-14 years by occupation

Occupation	Frequency	Percent
Service or sales worker	1,119	8.12
Agric., forestry, or fishery	11,822	85.75
Craft or related trade	314	2.28
Machine operator or assembler	21	0.15
Elementary occupation	510	3.7
Total	13,786	100

Source: Author's compilation from the GLSS 6, Ghana Statistical Service (2012/2013)

5.2.1a The extent of Economically Active Children (EAC) in the Urban and Rural Areas

Section 5.2.1 discusses the extent of an economically active child (whether a child was involved in economic activities in the last one week before the survey interview) in the urban and rural areas.

Table 5.2.1a The extent of Economically Active Children (EAC) in the Urban and Rural Areas

Residence	EAC	Frequency	Percentage	Cumulative
Rural	Yes	11,851	85.96	85.96
Urban	Yes	1,936	14.04	100
Total		13,787		

Source: Compiled by the author from GLSS 6 data

The above table presents the frequency and percentage of the rural-urban distribution of children who are economically active or not. Children in the rural areas are more engaged in economic activities relatively than children in the urban areas. From table 5.2.1a, 14.04 percent of children between the ages of 5-14 years in the urban areas participated in economic work seven days before the survey and 85.96 percent of children aged 5-14 years in the rural areas were economically active. A plausible reason for the high percentage of economically active children in the rural areas may be because most of the rural child workers are into agriculture which happens to be the main economic activity in the rural areas. Thus agriculture is the main activity of children in the rural areas.

5.2.1b Gender Distribution of Economically Active Children

From the GLSS 6 data set, male children between the ages of 5-14-years old who are economically active are about 51.08 percent and female children of the same age cohort who are economically active are about 48.92 percent. Thus male children are more economically active than female children.

Table 5.2.1b The Gender Distribution of Economically Active Children (EAC)

Gender	EAC	Frequency	Percentage	Cumulative
Female	Yes	6,745	48.92	48.92
Male	Yes	7,042	51.08	100
	Total	13,787		

Source: Compiled by the author from GLSS 6 data

5.3 The econometric framework of the probit model

The probit model is used in estimating a model with a dependent variable which has a binary outcomes, such as economically active child or not, for this study. It usually takes on two values; a zero (0) if a child is not economically active, or a one (1) if a child is economically active, as follows:

$$\text{Economically Active Child} = \begin{cases} 1 & \text{yes} \\ 0 & \text{no} \end{cases} \quad 5.1$$

Here, instead of estimating the values of one and zero, the model estimates the probability (p) that economically active child = 1 as a function of the explanatory variables. If we represent economically active child by "EAC" then,

$$1 = \Pr(EAC = 1 | X) = F(X^1\beta) \quad 5.2$$

Thus the probability of economically active child = 0, that is 'no' is derived as $(1 - p)$, Where $F(X^1\beta)$ is a cumulative distribution function of the standard normal distribution given as:

$$F(X^1\beta) = \phi(X^1\beta) = \int_{-\infty}^{(X^1\beta)} \phi(z) dz \quad 5.3$$

As, a result, the predicted probabilities are within the values of zero (0) and one (1). The probit model is estimated by Maximum Likelihood Estimation, and its errors (disturbances) are assumed to follow the standard normal distribution,

$$\phi(\varepsilon) = \frac{1}{\sqrt{2\pi}} e^{-\varepsilon^2/2} \quad \text{with a variance of } 1 \quad 5.4$$

The marginal effect for the probit model is derived as:

$$\frac{\partial y}{\partial x} = \phi(X^1\beta) \quad 5.5$$

5.4 Estimation Technique

The Probit model will be used to address the issue of the factors that are likely to influence children being economically active. The model is specified as:

$$EAC = \beta_0 + \beta_1 CC_i + \beta_2 HH_i + \beta_3 FE + \beta_4 ME + \beta_5 OF + \beta_6 OM + \beta_7 FP + \beta_8 MP + \beta_9 UrbRur + \beta_{10} Religion + \beta_{11} Region + \varepsilon_i$$

The Probit model is given as:

$$\Pr(EAC = 1 | CC_i, HH_i, FE, ME, OF, OM, FP, MP, UrbRur, Religion, Region) = \Phi(\beta_0 + \beta_1 CC_i + \beta_2 HH_i + \beta_3 FE + \beta_4 ME + \beta_5 OF + \beta_6 OM + \beta_7 FP + \beta_8 MP + \beta_9 UrbRur + \beta_{10} Religion + \beta_{11} Region + \varepsilon_i)$$

Where Φ = cumulative standard normal distribution function

EAC = economically active child or not

CC= vector of child characteristics (child age, age squared, gender)

HH= household characteristics (household size, age of the household head, age squared of the household head, gender of the household head, child's relation to the household head, adult wage rates in the household)

FE= educational attainment of the child's father

ME= educational attainment of the child's mother

OF= occupation of the child's father

OM= occupation of the child's mother

FP= father lives in the household with the child

MP= mother lives in the household with the child

Other variables included in the probit regression which is likely to affect child work are the residence, land ownership and religious affiliation. Therefore the probit model for this study is:

$\Pr(IM\ 1 | X) = f(c_age, c_gender, rel.hhh, hhsiz, educstatus, FP, MP, FE, ME, OF, OM, land\ owned, urban-rural, religion\ and\ regions).$

VI. Findings and discussions

6.1 Determinants of Economically Active Child in Ghana

The probit regression model is used to investigate which variables are significant in determining economically active child. The dependent variable which is economically active child is coded one (1) if the child was engaged in any economic activity in the last seven days before the survey interview and zero (0) if otherwise. Table 6.1 presents the findings from the probit model.

Table 6.1Binary Outcome of the Probit Results for the Economically Active Child

Pr (Economically active child) =1 yes Regressors	Coefficients (Standard errors)	Marginal effects (Standard errors)
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Child age (ref. cat. 11-14 years)		
5-10 years	-0.637*** (0.0261)	-0.214*** (0.00863)
Gender (ref. cat. Female)		
Male	-0.0345 (0.0255)	-0.0111 (0.00818)
Father's presence (ref. cat. Non-presence)		
Presence	-0.242 (0.626)	-0.0736 (0.178)
Mother's presence (ref. cat. Non-presence)		
Presence	-0.343*** (0.106)	-0.102*** (0.0286)
Child's educational status (ref. cat. No formal education)		
Formal education	-0.408*** (0.0452)	-0.139*** (0.0159)
Household size	-0.00329 (0.00494)	-0.00106 (0.00159)
Relationship to the household head (ref. cat. Child)		
Grandchild	-0.381*** (0.0908)	-0.129*** (0.0319)
Distant relative	-0.337*** (0.0904)	-0.115*** (0.0317)
Father's education (ref. cat. No formal education)		
Formal education	-0.0663** (0.0330)	-0.0213** (0.0106)
Mother's education (ref. cat. No formal education)		
Formal education	-0.0353 (0.0338)	-0.0113 (0.0108)
Household ownership of Land (ref. cat. No)		
Yes	0.0576** (0.0276)	0.0185** (0.00882)
Urban-rural residence (ref. cat. Rural)		
Urban	-0.698*** (0.0331)	-0.208*** (0.00855)
Religion (ref. cat. No religion)		
Christianity	-0.458*** (0.0752)	-0.157*** (0.0268)
Islam	-0.419*** (0.0785)	-0.144*** (0.0278)
Regions (ref. cat. Greater Accra)		
Western	-0.0545 (0.0822)	-0.0157 (0.0238)

Central	-0.127 (0.0843)	-0.0359 (0.0240)
Volta	0.135* (0.0771)	0.0412* (0.0231)
Eastern	0.418*** (0.0743)	0.135*** (0.0228)
Ashanti	0.213*** (0.0761)	0.0661*** (0.0230)
Brong-Ahafo	0.551*** (0.0749)	0.182*** (0.0230)
Northern	-0.00472 (0.0800)	-0.00138 (0.0234)
Upper East	0.423*** (0.0781)	0.137*** (0.0241)
Upper West	0.0979 (0.0774)	0.0295 (0.0230)
Constant	0.983*** (0.142)	
Observations	12,025	12,025

Note: The dependent variable is the probability of a child being economically active. The figures in parenthesis are the standard errors of the estimates and ***, ** and * refer to the statistical significance of the estimates at 1%, 5% and 10% respectively.

Log likelihood = -6823.5754

LR chi2 (23) = 1487.27

Prob> chi2 = 0.0000

Pseudo R2= 0.0983

Source: Author's compilation based on GLSS (6) data

Table 6.1 above presents the probit results of the probability of a child being economically active with respect to the child and household variables. The interpretation of the probit coefficients is done with respect to the significance, sign and the magnitude of the marginal effects. The presentation of the discussion of the probit results in table 5.4 is as follows:

For the age group, children between the ages of 5-10 years are less likely to be economically active compared to children aged 11-14 years, by 21 percent with a significance level of 1 percent. This might be because 5-10-year-old children are too young and more vulnerable than 11-14-year-old children even in petty economic activities as well as in agriculture and informal activities. It is, therefore, common to see 11-14-year-old children been engaged in economic activities than 5-10-year-old children. The study is, therefore, consistent with the findings of Okpukpara and Odurukwe (2006) that there is a higher likelihood for older siblings to be engaged in economic activities than younger siblings. The study also confirms the findings of Cummings (2016) that children who are older have a higher likelihood of participating in economic activities compared to younger children.

The gender gap that exists in the literature that girls are more likely to work than boys seems not to be a fairly well-established result. The results from the probit estimates suggest the gender of the child is insignificant in determining child work. The findings differ from the study (for Peru) by Sasaki and Temesgen (1999) that girls are more likely to work than boys to subsidise the human capital build-up of their brothers. Also, the result from

the study contradicts the findings by Patrinos and Psacharopoulos (1995) that boys are more likely to be economically active than girls.

The relationship of the child to the household head proved to be a significant determinant of child work. The child was used as the reference category. With regards to the relationship to the household head, grandchildren of the household head are less likely being economically active than a child to the household head by 12.9 percent points which is significant at 1 percent. The study is inconsistent with the findings of Cockburn (2001) and Ndjanyou and Djienouassi (2014) that children of the household head are less likely to work than children who are not biologically related to the household head. This result is better explained in instances where children work in family businesses where they handle money. Most household heads would prefer that their children work in their shops rather than distant relative children because of the trust they have in their children in handling their money.

The educational status of the child was significant in determining child work. For the educational status of the child, children who attend school are less likely being economically active by 13.9 percent points than children who do not attend school, holding other regressors constant. This is significant at a level of 1 percent.

The probit estimates further suggest that the presence of the mother in the household influences child work. Using mother's non-presence in the household as a reference category, children who live with their mothers are less likely to engage in economic activities by 10.2 percent points at a significance level of 1 percent than children who do not live with their mothers. The result is explained by the fact that most mothers living with their children or distant children will take care of the upkeep of those children in the household.

Empirically, it is fairly difficult to test directly the role of land ownership of the household in elucidating child work. Land as an asset is a major source of income for most rural households as land is used for various agricultural activities. The probit estimate shows that children from households that own land are more likely to be engaged in economic activities by 1.9 percent points compared to children in households that do not own land. This is significant at 5 percent critical level.

Again the results from the study suggest that the religious affiliation determines child work. The role of religion in child work decisions cannot be underestimated in Ghana because the majority of Ghanaians are attached to a religion. The probit results suggest that children who are Christians or Muslims are less likely to be economically active than children with no religion by 15.7 and 14.4 percent points respectively at a 1 percent significance level. This is explained by the prevalence of several Islamic and Christian basic schools in Muslim and Christian communities across the country. This is contrary to the findings of Canagarajah and Coulombe (1997) that religion does not influence the involvement of children in the labour market.

The urban-rural residence of a child affects child work. In the probit regression, the rural residence was made the reference category. It was observed that children in households located in the urban areas are less likely to be involved in economic activities compared to children in households in rural areas by 20.8 percent points. The results may be explained by the fact that many basic schools abound in the urban areas with easy accessibility as compared to the rural areas with limited basic schools which are difficult to access due to distance or financial constraint. The effect of residence predicted by the study is not different from the earlier findings by Nielsen (1998) for Zambia, and Ndjanyou and Djienouassi (2014) for Cameroon that children in the urban areas are less likely to be economically active than children in the rural areas.

The education of the father proved to be significant in determining the engagement of children in economic activities. By using no formal education as the reference category, the formal education of the father was significant in determining child work. According to the results fathers with formal education are less likely to engage their children in economic activities by 2.1 percent points. This is significant at 1 percent critical level. The results of the study is consistent with the findings of Dickson, Gregg et al. (2016) that an increase in the educational level of the father negatively influences the participation of children in the labour market.

VII. Summary

The study sought to examine the determinants of economically active children in Ghana using data set from the 2012/13 Ghana Living Standards Survey. The specific objectives were to examine the regional and occupational distribution of child work in Ghana and to evaluate the determinants of economic activities of children in Ghana.

The study could not establish the evidence that supports the gender gap in the literature that boys are more economically active than girls. From the premise that child work affects the human capital accumulation of the child, an attempt is made by the study in using a probit model to assess the determinants of economically active children in Ghana.

Based on the existing empirical and theoretical literature, some variables like child age, child gender, child's relation to the household head, household size, educational status of the child, father's education, mother's education, father's presence in the household, mother's presence in the household, household's ownership of productive assets (land), residence, religion of the child and regional dummies were used in the bivariate probit regression to estimate the determinants of economically active children.

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