

# CHILD LABOR IN GHANA: A MULTIDIMENSIONAL ANALYSIS

---

Inaugural-Dissertation

zur Erlangung des akademischen Grades eines Doktors

der Wirtschafts- und Sozialwissenschaften

der Wirtschafts- und Sozialwissenschaftlichen Fakultät

der Christian-Albrechts-Universität zu Kiel

vorgelegt von

Victoria Nyarkoah Sam

aus Ghana

Kiel, November, 2016

Christian-Albrechts-Universität zu Kiel, Leibnizstraße 3, 24118 Kiel

Gedruckt mit Genehmigung der  
Wirtschafts- und Sozialwissenschaften  
Fakultät der Christian-Albrechts-Universität  
zu Kiel

**Dekan:**

Prof. Dr. Till Requate

**Erstberichterstattender:**

Prof. Dr. Christian Seidl

**Zweitberichterstattender:**

Prof. Dr. Annekatriin Niebuhr

Tag der Abgabe der Arbeit: 23.08.2016  
Tag der mündlichen Prüfung: 01.11.2016

# Supervisors

## **Prof. Dr. Christian Seidl**

Institut für Volkswirtschaftslehre

Emeriti und pensionierte Professoren

Olshausenstrasse 40, 24098 Kiel, Germany

Tel: 0049431880-3315

E-Mail: [seidl@economics.uni-kiel.de](mailto:seidl@economics.uni-kiel.de)

## **Prof. Dr. Annekatriin Niebuhr**

Institut für Volkswirtschaftslehre

Direktoren

Wilhelm-Seelig-Platz 1, 24118 Kiel, Germany

[Tel: 0049431880-1301](tel:00494318801301)

E-Mail: [Niebuhr@economics.uni-kiel.de](mailto:Niebuhr@economics.uni-kiel.de)

## **Dedicated to**

Samuel and Nana Kwame Abaidoo.

## **ACKNOWLEDGEMENT**

This Thesis is the result of three years of hard work and the support from many people. I therefore owe a lot of gratitude to a number of personalities and institutions who in diverse ways contributed to the successful completion of my PhD. First, I wish to express my greatest gratitude to the Almighty God for providing me with knowledge, strength and protection to successfully complete this thesis. Without him, I would not have been able to finish putting these thoughts of mine together.

I would also like to express my sincere gratitude to the German Academic Exchange Service (Deutscher Akademischer Austausch Dienst, (DAAD)) for considering me eligible for the scholarship and funding my study for this whole three years. My desire for a Doctorate degree wouldn't have been a reality without their financial support.

I am very grateful to my Supervisors; Professor Christian Seidl and Professor Annekatrin Niebuhr, for their useful comments, criticisms, suggestions, consistent support and guidance throughout the course of my study. Their advices and encouragement helped me to proceed and finish the research work. Their invaluable and timely support has enabled me to meet all the deadlines and produce my dissertation on time. I would like to thank them for monitoring the work and taking effort in reading and providing strict and extensive comments. All the discussions and the interactions I had with them have made a direct impact in improving the quality of this Thesis.

I am also thankful for the Department of Quantitative Economics, University of Kiel for giving me an opportunity to study and carry out my research work in this prestigious institution. The opportunity has helped me a lot in gaining knowledge and skills to finish my research work.

My appreciation also goes to the Ghana Statistical Service (GSS) for conducting the sixth round of the Ghana Living Standards Survey (GLSS) and especially for including a section of Child Labor and making the data available to me on time. I am also grateful to my friend and colleague Dr. Franklin Amuakwa-Mensah for his immense contribution in generating very important variables for this Thesis.

To my Husband and Son, Samuel Darko Abaidoo and Nana Kwame Abaidoo, I am extremely thankful for their prayers, patience and steadfastness in coping with my absence from home during the period of putting this dissertation together. I wish to also extend special gratitude to my parents, Mr. and Mrs. Sam as well as my siblings for their support and prayers.

## **ABSTRACT**

Child labor is a threatening evil. It is particularly dangerous because it involves the sacrifice of a child's future welfare in exchange for immediate benefit; it is a difficult phenomenon to combat because it involves questions of power within the households. This study attempts to comprehensively investigate various dimensions of child labor in Ghana and show whether its ban will be beneficial to the country.

Drawing on the GLSS6 datasets, the study applied four different estimation approaches to achieve the main objectives. A univariate logit estimation to determine the factors that make parents cause their children to work and to test the poverty hypothesis and the intergenerational transmission of child labor. A bivariate probit estimation to determine the factors that jointly determine child working and schooling decision and to investigate whether there is a trade-off between these two decisions. The study also applied a Heckman selection estimation approach to find out the factors which determine the number of hours a child supplies to the work. Finally, the study applied both an ordinary least squares (OLS) and an instrumental variable (IV) approaches of estimation to analyze the impact of child labor on the adult labor market.

Based on the univariate estimation approach, the study provided evidence to indicate that poverty is a very important determinant of child labor in Ghana. We found evidence to support the claim that child labor in Ghana follows an intergenerational pattern, thus parents who were once child laborers are more likely to cause their children to work. It was also found that there is a trade-off between child working and schooling decisions. The bivariate probit estimation showed that the factors that jointly determine child work and school are age of the child, the presence of the father in the house, the poverty status of the household and location of the community (urban or rural).

Using the Heckman selection estimation approach, we observed that factors such as the age of the child, certain household, parents and community characteristics are the main determinants of child labor supply. In the study, we found no gender gap in the hours supplied by children to work. The analysis of the impact of child labor on the labor market showed that child labor indirectly depresses the wages of adults, slightly increases unemployment in the adults' labor market and negatively affects adults' hours of work and their participation in the labor market.

Based on the findings, the study recommends that policies aimed at alleviating poverty are crucial in tackling child labor and breaking the cycle of poverty transmission from one generation to the next. Policies that are able to break this cycle, family by family are potentially the most effective instrument to reduce the incidence of child labor. Education also seems to be essential in breaking the cycle of poverty and child labor; we therefore recommend that campaigns such as the Free Compulsory Universal Basic Education (FCUBE) and the Capitation Grant must have more depth than is currently the case.



# TABLE OF CONTENT

ACKNOWLEDGEMENT .....	i
ABSTRACT.....	iii
TABLE OF CONTENT .....	v
LIST OF TABLES .....	x
LIST OF FIGURES .....	xiii
LIST OF ACRONYMS .....	xiv
CHAPTER ONE: INTRODUCTION .....	1
1.1    Background and Problem Statement.....	1
1.1.1 <i>Why is Child Labor an Economic Issue of Concern?</i> .....	6
1.2    Objectives of the Study and Research Questions.....	7
1.3    Testable Hypotheses .....	8
1.4    Significance and Contribution of the Study.....	9
1.5    Methodology .....	11
1.6.1 <i>Economic Repercussion of Child Labor</i> .....	11
a) <i>Impact of Child Labor on Labor Market Outcomes</i> .....	11
b) <i>Child Labor Supply in Ghana</i> .....	12
1.6.2 <i>Socio-Economic Factors of Child Labor in Ghana</i> .....	13
a) <i>Why do Parents Cause their Children to Work? Test for the Poverty Hypothesis and the Intergenerational Transmission of Child Labor.</i> .....	13
b) <i>Joint Probability of Child Labor and Schooling Decision in Ghana.</i> .....	15
1.6    Organization of the Study .....	16

CHAPTER TWO: LITERATURE REVIEW .....	18
2.0 Introduction.....	18
2.1 Child Labor Definition.....	18
2.1.1 Worst Forms of Child Labor .....	20
2.2 Theoretical Literature.....	22
2.2.1 Determinants of Child Labor .....	22
a. The Poverty Hypothesis .....	24
b. The Poverty Trap and Child Labor.....	28
c. Household Composition Hypothesis .....	29
d. Capital Market Hypothesis .....	29
e. Credit Market and its Impact on Schooling and Working Decisions.....	30
2.2.2 Child Labor and its Impacts on the Labor Market .....	32
2.3 Empirical Literature Survey.....	36
2.3.1 Child Labor and the Poverty Hypothesis .....	36
2.3.2 Child Work and Schooling Decisions .....	38
2.3.3 Labor Market Effects of Child Labor.....	40
2.3.4 Intergenerational Transmission of Child Labor .....	42
2.4 Summary .....	43
CHAPTER THREE: REVIEW OF CHILD LABOR IN GHANA .....	45
3.0 Introduction.....	45
3.1 Incidence of Child Labor Overtime and within Regions .....	45

3.2 Characteristics of Child Labor in Ghana.....	48
3.2.1 <i>Nature and Conditions of Work</i> .....	48
3.2.2 <i>Occupational Distribution of Child Labor</i> .....	49
3.3 Child Labor and School Attendance in Ghana.....	52
3.4 Legislations and Policies Implemented so far to Eradicate Child Labor in Ghana.....	56
3.4.1 <i>Legislations on Child Labor in Ghana</i> .....	57
3.4.2 <i>Policies on Child Labor in Ghana</i> .....	58
3.5 Summary .....	60
CHAPTER FOUR: DATA AND DESCRIPTIVE STATISTICS .....	62
4.0 Introduction.....	62
4.1 Data Source.....	62
4.2 Dependent Variables .....	63
4.3 Independent Variables .....	65
CHAPTER FIVE: SOCIO-ECONOMIC FACTORS OF CHILD LABOR .....	74
5.0 Introduction.....	74
5.1 Empirical Model and Measurement of Variables. ....	74
5.2 Why do Parents Cause their Children to Work? Test for the Poverty Hypothesis and the Intergenerational Phenomenon of Child Labor.....	81
5.2.1 <i>Results for the Pooled Sample</i> .....	82
5.2.2 <i>Differences in the Probability to Work between Boys and Girls</i> .....	88
5.2.3 <i>Differences in the Probability to Work between Urban and Rural Inhabitants</i> .....	93

5.3 Determinants of Joint Probability of Child Work and Schooling Decision; a Bivariate Probit	
Analysis .....	99
5.3.1 Factors that Jointly Determine Child Work and School .....	100
5.3.2 Factors that Determine the Probability of Combining Work and Schooling.....	105
5.4 Summary .....	109
<b>CHAPTER SIX: DETERMINANTS OF CHILD LABOR SUPPLY IN GHANA.....</b>	<b>112</b>
6.0 Introduction.....	112
6.1 Theoretical Framework.....	112
6.2 Estimation Strategy .....	114
6.3 Description and Measurement of Variables.....	115
6.4 Determinants of Child Labor Supply .....	120
6.4.1 Results for Pooled Sample .....	120
6.4.2 Results for Separate Gender .....	125
6.5 Summary .....	129
<b>CHAPTER SEVEN: CHILD LABOR AND ADULT LABOR MARKET .....</b>	<b>131</b>
7.0 Introduction.....	131
7.1 Substitutability between Child and Adult Labor.....	131
7.2 Impact of Child Labor on Labor Market Outcomes.....	134
7.2.1 Theoretical Framework and Econometric Approach.....	134
7.2.2 Description of Variables .....	136
7.2.3 Results for Impact of Child Labor on Labor Market Outcomes .....	140
7.3 Summary .....	144

CHAPTER EIGHT: SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS .....	145
8.1 Summary of Empirical Findings .....	145
8.2 Conclusion and Policy Recommendations.....	149
APPENDICES .....	151
QUESTIONNAIRE USED BY THE GLSS6 SURVEY .....	170
REFERENCES .....	173
AFFIRMATION .....	181

## LIST OF TABLES

Table 3.1: Incidence of Child Labor by Regions in 2012/2013.....	47
Table 4.1: Descriptive Statistics of Dependent Variables in Chapter Five.....	64
Table 4.2: Hours of Work Supplied In a Week by Working Children.....	64
Table 4.3: Descriptive Statistics of Independent Continuous and Discrete Variables.....	66
Table 4.4: Descriptive Statistics of Independent Categorical Variables .....	67
Table 5.1: Univariate Logit Estimation for the Probability of Child Work. Pooled Sample for all Children 5-14.....	82
Table 5.2: A Univariate Logit Estimate for the Probability of Child Work. Estimation for Separate Gender.....	89
Table 5.3: Univariate Logit Estimation for the Probability of Child Work. Estimation for Separate Location.....	97
Table 5.4: Bivariate Probit for Factors that Jointly Determine Child Work and School.....	102
Table 5.5: Marginal Effects for the Probability of Combining Work and School.....	107
Table 6.1: Child Labor Supply Function for Pooled Sample; OLS Results of Heckman Selection Estimation.....	121
Table 6.2: Child Labor Supply Function for Separate Gender; OLS Results of Heckman Selection Estimation .....	126
Table 7.1: Pairwise Correlation between Adults and Children.....	133
Table 7.2: Definition of Variables used in Estimations.....	137
Table 7.3: Descriptive Statistics of Variables.....	139
Table 7.4: Impact of Child Labor on Labor Market Outcomes; Pooled Sample (OLS).....	141

Table 7.5: Impact of Child Labor on Labor Market Outcomes; Pooled Sample (IV).....	142
Table 7.6: Impact of Child Labor on Labor Market Outcomes; Separate Location Sample.....	143
Table A3.2: Occupational Distribution of Working Children by Age, Sex, Locality of Residence and Region in 2001.....	151
Table A3.3: Occupational Distribution of Working Children by Age, Sex, Locality of Residence and Region in 2012/2013.....	153
Table A3.4: Distribution of Working Children by Period of Activity, Sex, Age Group and Locality of Residence in 2012/2013.....	155
Table A5.1: Definition of Variables used in Estimations for Chapters Five and Six.....	156
Table A5.2a: Correlation Test for Independent Variables in Chapters Five and Six.....	160
Table A5.2b: Correlation Test for Independent Variables Continue.....	160
Table A5.2c: Correlation Test for Independent Variables Continue .....	161
Table A5.2d: Correlation Test for Independent Variables Continue.....	161
Table A5.3: Tradeoff between Child Schooling and Working Activities.....	162
Table A6.1: Results for Selection Equation for the Pooled Sample.....	163
Table A6.2: Selection Equation for Separate Gender.....	165
Table A7.1: Full Equation for Impact of Child Labor on Labor Market Outcomes. Pooled Sample.....	167

Table A7.2: Full Equation for Impact of Child Labor on Labor Market Outcomes. Urban  
Only.....168

Table A7.3: Full Equation for Impact of Child Labor on Labor Market Outcomes. Rural  
Only.....169



## LIST OF FIGURES

Figure 2.1: Impact of Child Labor on Unskilled Adults with Upward Slopping Supply Curve.....	34
Figure 2.2: Impact of Child Labor on Unskilled Adults with Elastic and Inelastic Supply Curves.....	35
Figure 3.1: School Attendance Rate Overtime.....	55
Figure 4.1: Distribution of Hours of Work by Boys and Girls.....	65
Figure 4.2: Distribution of Yearly Gross Household Income.....	71
Figure 4.2: Distribution of Household Size.....	72

## LIST OF ACRONYMS

AES	Awutu-Efutu-Senya
EA	Enumeration Areas
FCUBE	Free Compulsory Universal Basic Education
GDP	Gross Domestic Product
GLSS	Ghana Living Standards Survey
GSS	Ghana Statistical Service
ILO	International Labor Organization
IPEC	International Program on the Elimination of Child Labor
IV	Instrumental Variable
LFS	Labor Force Survey
MMYE	Ministry of Manpower, Youth and Employment
NPECLC	National Program for the Elimination of the Worst Forms of Child Labor in the Cocoa Sector
OAU	Organization of Africa Union
OLS	Ordinary Least Squares
PIHS	Pakistan Integrated Household Survey
PTA	Parents and Teachers Association

SIMPOC Statistical Information and Monitoring Program on Child Labor

UN United Nations

WACAP West African Cocoa and Commercial Agriculture Program

# CHAPTER ONE: INTRODUCTION

## 1.1 Background and Problem Statement

Ghana is on the west coast of Africa and bounded on the north and northwest by Burkina Faso, on the east by Togo and on the west by Côte d'Ivoire. The total area of Ghana is 238,537 sq. km (92,100 sq. mi). As of 1 January 2016, the population of Ghana was estimated to be 27,266,312 people. The annual gross domestic product (GDP) growth rates recorded in Ghana for the period 2005 to 2013 ranged from 4.0 percent to 15.0 percent with the lowest growth rate recorded in 2009 and the highest in 2011. The Ghana Living Standards Survey 6 (GLSS 6) results show that about a quarter of Ghanaians are poor whilst under a tenth of the population is in extreme poverty. The methodology used by the Ghana Statistical Service produced an extreme poverty line of 792.05 Ghana Cedis and an absolute poverty line of 1,314.00 Ghana Cedis per equivalent adult per year in the January 2013 prices of Greater Accra Region. The proportion of the population defined as poor as at 2012/2013 was 24.2 percent, with a poverty gap index of 7.8 percent (in other words, the mean income of the poor falls below the poverty line by 7.8 percent). These percentages indicate that about 6.4 million people in Ghana are poor. Cost of living in Ghana is 9.21 percent lower than in Germany.

Ghana is among the countries with the world's largest proportion of working children. Data suggests that 24.3 percent<sup>1</sup> of the population aged 5-14 according to GLSS 6 (2012/2013) is economically active. Nearly all the economically active children aged 5 to 14 years (99.8 percent) are engaged in some form of economic activity. According to the United States Department of Labor (2007), 24.2 percent of children between the ages of 5-14 years in Ghana in the year 2000

---

<sup>1</sup> Average of the Figures from the 1<sup>st</sup> to 3<sup>rd</sup> and 4<sup>th</sup> to 6<sup>th</sup> cycle report.

were engaged in economic activity. This shows that the percentage of working children over the years has not declined even though a lot of policies have been put in place to curb the situation. The issue of child labor is a major concern of the Government of Ghana, as it is for many other countries. The problem has long been recognized and the Government has enacted laws to prohibit child labor and to develop national programs to meet the urgent needs of children in the country (Ghana Statistical Service (GSS), 2003, p. ii).

Ghanaian policy makers attach major importance to the formation of its human capital from childhood to adulthood and recognize child labor issues both from developmental and human rights perspectives. With regards to human capital formation, childhood in Ghana is structured to be spent with the family and the school, for a proper foundation of socialization-the process of moral and social integration into society, to be laid. With respect to human rights, Ghana has been part of the global effort to intricate, ratify and implement the relevant United Nations (UN) Conventions on child rights and development.

More significantly, the nation has gone beyond legislation to inaugurate institutions that would facilitate the actualization of child rights and development. Nevertheless, the practice of child labor and its worst forms continues in Ghana. Some of the worst forms of child labor that can be found in Ghana are forms of slavery and similar practices including sale and trafficking of children; debt bondage; work that is likely to jeopardize the health, safety, or morals of children; work, which exposes children to physical, psychological or sexual abuse; children working under water, or engaged in carrying heavy loads; work in an unhealthy environment; work under particularly difficult conditions, such as work for long hours, or during the night, or where the child is unreasonably confined to the employer's premises (Afenyadu, 2010, p. 3).

Child labor is a threatening evil. It is particularly dangerous because it involves the sacrifice of a child's future welfare in exchange for immediate benefit; child labor is a difficult phenomenon to combat because it involves questions of power within the households. Child labor in Ghana can be observed mainly in occupations such as: fisheries, mining, farming, quarrying, portage, hunting, etc. The United States Department of Labor (2007) reported that in the year 2000: 71 percent of working children were in the agricultural sector; this was followed by the services sector with 22.6 percent, 5.8 percent in the manufacturing sector and 0.6 percent in the other sectors. Children are used in these sectors for different activities, for instance children are used as workers in the fishing industry because, in addition to being cheap labor, their small, nimble fingers are useful in releasing the fish from the ever smaller nets. People living along the coast regard fishing as an integral aspect of their cultural identity and therefore insist that their children learn the fishing and fish processing occupation, no matter the circumstances. In line with this orientation, households in these areas, no matter their social class would ensure that their citizens assimilate the knowledge, attitudes, skills, and values associated with fishing and fish processing in their childhood. Thus children are trained from a very tender age, to acquire skills in swimming, handling the fishing net, and diving, through apprenticeship. Some of the training methods are risky. Children may be asked to dive deep into the sea, if they return too quickly according to the estimation of their masters, they are beaten to return. However, for children who are very young, a rope is tied around their waist while on fishing expeditions or training so that they can be easily rescued by pulling the rope. There is evidence however that some children get drowned during training. According to Afenyadu, (2010, p. 6), fisher entrepreneurs would insist that at least one or more of their children familiarize enough with the practice and management of fishing and related activities to be able to inherit their

parents' assets, and thereby take over and sustain the family business in future, hence their insistence on engaging their children in the industry. Child labor in fishing and fish processing therefore becomes the socio-cultural mechanism by which the fishery culture is transferred from one generation to the next.

In rural areas of Ghana, children work in commercial agriculture including cocoa farms. Children, including girls, are also engaged in quarrying and small-scale mining activities, including extraction, transportation, and processing (ILO-IPEC, 2007, p. 1). In urban centers, children work in the informal economy in such activities as transportation, restaurant work, street vending, and petty trading. Many girls work as head porters ("kayaye") in urban areas such as Accra, Kumasi, and Takoradi. These girls often live on the streets and are especially vulnerable to being exploited in prostitution. Children in Ghana are also engaged in commercial sexual exploitation, including the tourist destinations of Elmina and Cape Coast.

There has been an emergent concern in relation to the use of children's time and energy, predominantly in activities that may be damaging to their education, health and development. This predicament of children has been acknowledged by the Government of Ghana, and a number of programs over the years have been carried out to protect children against threats to their development. The Government of Ghana recognizes the problem of working children and was among the first countries to ratify the Convention on the Rights of the Child adopted at the end of the 1990 World Summit for Children. To show its seriousness, Ghana developed a National Program of Action called "*The Child Cannot Wait*" in June 1992, which provided the initial policy framework, strategies and programs, demonstrating Government's commitment to meeting the urgent needs of children in the country (GSS 2003, p. 5). Ghana's Labor Laws and Regulations also discourage child labor, putting the minimum age of employment at 15 in

consonance with ILO Standards and Regulations. Ghana has also ratified the Organization of Africa Union (OAU) Charter on the Rights of the Child. Section 28(1) of the 1992 Constitution guarantees the child in Ghana to be protected from engaging in any work that is considered detrimental to his or her health, education and/or development. The Government enacted, in December 1998, the Children's Act, which seeks to protect the rights of children, including the right of education, health and shelter. More recently, Ghana's Vision 2020 adopted a human-centered approach to development with emphasis on social welfare issues such as poverty, hunger and the problem of child labor.

Despite these commendable initiatives, the problem of working school-age children (either dropping out of the school system all together or combining work with schooling) is on the increase. Although the network of organizations (both government and non-governmental) interested in and concerned with the problem of working children has been expanding, their activities have been limited. This notwithstanding, there are diverging views from early researches on child labor. While some argue that child labor is totally harmful to the child in all aspects of the child's life and as such should be abolished, others argue that there are justifications for children being involved in the labor market; hence abolishing is not the solution but addressing the causes can solve the problem. In Ghana for instance, early researchers on child labor such as Canagarajah and Coulombe (1997, pp. 28-29) maintain that child work should have no place in the lives of children. On the other hand, others like Sackey (2013, p. 3) hold the view that child labor should be discussed within the context in which the child is raised. According to Afenyadu, (2010, p. 2), engaging children in work is not perceived as dangerous if it does not jeopardize the child's mental, physical, or moral health and development. Rather, it is considered that such work is socially necessary, as the child acquires basic knowledge, skills,



and sense of responsibility, which could prove beneficial in later life. Such diverging views pose a problem for policy makers, it is therefore necessary to look at child labor in a multidimensional way in order to address the issue wholly.

### ***1.1.1 Why is Child Labor an Economic Issue of Concern?***

In most of the research work done on child labor, it is usually the economic implications that dominate theoretical models. According to Jafarey and Lahiri (2000a, p. 5), economic theories of child labor have been based on some shared premises that, firstly, child labor is a socially undesirable phenomenon and as such its reduction is a commendable objective by any society. Secondly, there exist other more desirable activities that a child can engage in; these include school attendance and leisure. Thirdly, child labor decisions in most of the situations are not the prerogative of the children but of a parent. Parents are not however, motivated by narrow self-interest but by a compassionate and rational outlook which takes into account the welfare of the whole household, including that of the child. As a result of this, the parents share in the detrimental consequences of child labor through the introduction of a psychological cost of children working.

If parents are averse to child labor, then the decision to nevertheless impose it upon their children must be based on the economic conditions facing the household (Jafarey and Lahiri, 2000a, p. 5). Many studies in the past that attempted to give economic explanations of child

labor emphasized abject poverty as the most important reason for engaging children in market activity. However, in the words of Kailash Satyarthi<sup>2</sup>:

Children are employed not just because of parental poverty, illiteracy, ignorance, failure of development and education programs, but quite essentially due to the fact that employers benefit immensely from child labor as children come across as the cheapest option, sometimes working even for free.

The arguments above show that when a child works, he or she is not the only bearer of the consequences, but the parents, the members of the household, the community, other participants in the labor market and hence the economy as a whole are affected in diverging ways. It is therefore important to discuss the issue of child labor in a multifaceted manner in order to measure the various consequences.

## **1.2 Objectives of the Study and Research Questions**

The general objective of the study is to examine the economic repercussion of child labor on the Ghanaian labor market and also to investigate the socio-economic factors that explain why parents cause their children to work. As a follow up to the problem discussed above, it is essential that answers be found to a number of pertinent questions related to the issue of child labor.

- a. Is child labor a substitute for adult labor?

---

<sup>2</sup> (one of the Nobel peace prize winners, 2014, <http://news.yahoo.com/pakistani-teenager-indian-childrens-activist-win-nobel-peace-090729703.html>)

- b. Do children replace jobs of adults or does child labor increase adult unemployment?
- c. Does child labor depress the wages of adults?
- d. Why will Ghanaian parents cause their children to work?
- e. What are the characteristics of child labor in Ghana?
- f. Which factors jointly influence child labor and schooling decision in Ghana?
- g. Is there any tradeoff between child labor and schooling decision in Ghana?
- h. Does gender have an impact on child labor in Ghana?
- i. Is poverty an important determinant of child labor in Ghana?
- j. Is child labor in Ghana an intergenerational phenomenon?
- k. Which factors motivate children to supply labor and which factors determine the hours supplied by children in the labor market?

### **1.3 Testable Hypotheses**

In seeking answers to the research questions posed above, the following related hypotheses are tested.

- Child labor is not a substitute for adult labor
- Children do not replace adult work, i.e., child labor does not increase adult unemployment

- Child labor does not depress the wages of adults.
- Poverty is not a determinant of child labor in Ghana.
- Gender has no influence on child labor in Ghana.
- There is no tradeoff between child working and schooling decision in Ghana.
- There are no factors that jointly influence child working and schooling decision in Ghana.
- Child labor in Ghana does not follow an intergenerational pattern.

### **1.4 Significance and Contribution of the Study**

Many economists argue that child labor is a symptom of poverty and that its reduction can most effectively be accomplished through the alleviation of poverty. It is possible that child labor is a symptom of poverty. This is because rarely do well-to-do parents sacrifice their children's education by causing them to work. However, child labor is also a cause of future poverty, so direct measures to move children from work into school can make an important contribution to poverty alleviation and to development in general.

In order to construct effective policies to mitigate the problem of child labor, it is necessary to examine the economic repercussions of child labor on the Ghanaian labor market and also to understand the circumstances that lead parents to cause their children to work by discussing the issue in a multidimensional way. This is the purpose of this study - to examine the economic repercussion of child labor on the Ghanaian labor market and also to investigate the socio-economic factors that induce parents to cause their children to work; to identify factors that jointly determine the working and schooling decisions of children in Ghana; to determine

whether there exists a tradeoff between these two decision; to determine the impact of poverty on child labor and to investigate whether child labor follows an intergenerational pattern.

This study differs from the others conducted in Ghana in a number of ways. First and foremost, almost all of the literature on child labor in Ghana has focused on the socio-economic determinants of child labor and their policy implications, generally neglecting the issue of the economic impact of child labor. This paper in addition to that, makes an effort to investigate into the economic repercussion of child labor on the Ghanaian labor market in addition to the socio-economic factors.

Secondly, while other studies only investigated the tradeoff between children's activity in the labor market and their schooling hours, or only investigated the impact of poverty on child labor, this study conducts a multidimensional analyses, investigating child labor from the point of view of parents and children themselves, i.e. analyze the impact of child labor on the labor market, investigate the reasons why parents cause children to work, determine whether there exist a tradeoff between child work and schooling decisions, find whether poverty is a determinant of child labor, investigate whether child labor is intergenerational, thus parents who were child laborers themselves are likely to cause their children to work, and also to investigate the factors that determine the hours supplied by children in Ghana. There is little empirical evidence in the literature and none at all in Ghana on how child labor perpetuates poverty from one generation to another, or on how parents who were child laborers are more likely cause their children to work as well.

Thirdly, this study is based on the most recent household survey data in Ghana i.e. the GLSS6, which in addition to the Labor Force Survey (LFS) module, has a section on child labor.

The current data therefore provides reliable information on the issue of child labor. The findings of this study may provide a basis for the formulation of policies that will help addressing the issue of child labor in Ghana.

## **1.5 Methodology**

In this section we present a brief methodology i.e. the theoretical framework to be used to achieve the objectives of the study. With reference to the objectives of the study, we present here the various models necessary for their achievement. The objectives of the study can be grouped into two main parts: Economic repercussion of child labor on the Ghanaian labor market and the socio-economic factors of child labor.

### ***1.6.1 Economic Repercussion of Child Labor***

#### ***a) Impact of Child Labor on Labor Market Outcomes***

In order to measure the impact of child labor on major labor market outcomes such as adult wages, adult unemployment, adult employment, adult hours of work and adult labor force participation, we follow the model used by Altonji and Card (1991, pp. 203-206) as follows:

$$\ln W_j = \beta X_j + \delta Cr_j + \varepsilon_j \quad (1.1)$$

Where  $\ln W_j$  is the log of adult mean wage of area j

$X_j$  is the vector of the mean of explanatory variables

$Cr_j$  is the rate of child labor in area j

$\beta$  is a vector of parameters

$\delta$  is the effect of child labor on mean adult wage and  $\varepsilon_j$  is the residual term.

Equation (1.1) is for determining the impact of child labor on adult wages. For the impact of child labor on adult unemployment, adult employment, adult hours of work and adult labor force participation we use the equation below;

$$Q_j = \beta X_j + \delta Cr_j + \varepsilon_j \quad (1.2)$$

Where  $Q_j$  stands proxy for the rate of employment, rate of unemployment, average hours of work for adults and the rate of labor force participation in area  $j$ , and the rest of the variables are as defined above.

We estimate Equation (1.1) and (1.2) above using ordinary least squares (OLS) and instrumental variable (IV) approaches of estimation. For the IV approach we use the share of mothers and share of fathers who were child laborers as instruments for the rate of child labor

To test for the substitutability between adult and child labor, we run a correlation test between children and adults' hours of work and also between children and adults' wage rate. A negative correlation between child's and adults' hours of work and a positive correlation between children and adults' wage rate implies that child labor is a substitute for adult labor. The reverse is therefore true for complementarity between child labor and adult labor.

### ***b) Child Labor Supply in Ghana***

To find out the factors which determine the number of hours a child supplies to the labor market, we fall on the model used by Edmonds (2003, pp. 21-22). This model will be explained in detail

later in chapter six. The study adopts the Heckman two-stage procedure, which involves estimating a participation function in the first stage to derive an inverse Mills ratio. The inverse Mills ratio so derived is then used in the second stage OLS estimation as a regressor to correct for the specification bias that results from excluding the sample of non-working children from the estimated equation. We make the assumption that the error term is a normally distributed random variable; hence we estimate a separate probit equation in Equation (1.3) as follows:

$$P(Q_i = 1) = \alpha_i + \beta_1 Y_i + \beta_2 E_i + \beta_3 A_i + \varepsilon_i \quad (1.3)$$

Where  $Q = 1$  if the child works and  $Q = 0$  if the child does not work,  $Y$  is the household income without child income,  $E$  is hours spent in school,  $A$  is a vector of other child, parent, household and community characteristics and  $\varepsilon$  is the error term.

This equation is then used to derive the inverse Mills ratio (INV) which is used as an explanatory variable in the child labor supply function in Equation (1.4).

$$H_i = \alpha_i + \beta_1 Y_i + \beta_2 E_i + \beta_3 A_i + \beta_4 INV + \varepsilon_i \quad (1.4)$$

## **1.6.2 Socio-Economic Factors of Child Labor in Ghana**

### ***a) Why do Parents Cause their Children to Work? Test for the Poverty Hypothesis and the Intergenerational Transmission of Child Labor.***

In order to examine the factors that induce parents to cause their children to work, the study will apply a univariate logit model based on information about the child and his or her family. The logit model assumes that there is a latent variable  $Y^*$  such that:

$$Y^* = X\beta + \varepsilon$$

Where  $Y = 1$  if  $Y^* > 0$  and  $Y = 0$  if  $Y^* \leq 0$



Thus  $Y = 1$  if parents cause child to work and  $Y = 0$ , otherwise,  $X$  is a vector of explanatory variables.

The estimated coefficients and their standard errors as well as marginal effects (partial derivatives) of independent variables in the logistic model will be reported. The marginal effect of the probability of a particular independent variable is calculated as:

$$\frac{\partial y}{\partial x} = \beta p(1 - p)$$

Where  $\beta$  is the logit coefficient,  $p$  is the probability that  $y$  equals 1, and  $(1 - p)$  represents the probability that  $y$  is 0. (see Maddala (1988, p. 332) for details). The standard errors of the coefficients will be corrected for clustering since some children in the sample will be in the same households and therefore will not constitute independent observations.

The model to be estimated will be as follows:

$$P(Y = 1) = \alpha + \beta_1 \text{child}X'tics + \beta_2 \text{Parent}X'tics + \beta_3 \text{HHX'tics} + \beta_4 \text{Com}X'tics + \varepsilon \quad (1.5)$$

Where  $Y = 1$  if parents cause child to work and  $Y = 0$  otherwise, *ChildX'tics* is a vector of child characteristics, this includes gender and age of the child. *ParentX'tics* is a vector of parent characteristics such as mother and father's educational level and parents being child laborers. *HHX'tics* is a vector of household characteristics such as household size, poverty level and religious background. *ComX'tics* is a vector of community characteristics such as location (urban or rural) and  $\varepsilon$  is the error term.

**b) Joint Probability of Child Labor and Schooling Decision in Ghana.**

In order to investigate the joint probability of children working and schooling, we use a bivariate probit model to test the likelihood of children working and going to school given diverse individual characteristics. In this research we assume that children working and schooling decisions are interdependent, because we do not believe that these two decisions are independent and also follow a sequential process; hence the use of bivariate probit model. This model will allow for the existence of possible correlation between the disturbances of the two decisions. Also, the bivariate model will help us test for the existence of the interdependence between the two decisions and whether there is a significant difference between the joint estimation and univariate estimation. The bivariate probit assumes that there are two latent variable  $Y_1^*$  and  $Y_2^*$ .

Let the latent variable  $Y_1^*$  represent the decision to work and  $Y_2^*$  the decision to go to school.

The general specification of a two-equation model is as follows:

$$Y_1^* = X_1\beta_1 + \varepsilon_1, \quad Y_1 = 1 \text{ if } Y_1^* > 0; Y_1^* = 0 \text{ otherwise} \quad (1.6)$$

$$Y_2^* = X_2\beta_2 + \varepsilon_2 \quad Y_2 = 1 \text{ if } Y_2^* > 0; Y_2^* = 0 \text{ otherwise} \quad (1.7)$$

$$E(\varepsilon_1) = E(\varepsilon_2) = 0$$

$$Var(\varepsilon_1) = Var(\varepsilon_2) = 1$$

$$Cov(\varepsilon_1, \varepsilon_2) = \rho$$

The dependent variable in the first equation is defined as 1 if the child works and 0 if otherwise.

The dependent variable in the second equation is defined 1 if the child attends school and 0 if

otherwise.  $X_1$  and  $X_2$  are the exogenous explanatory variables determining the working and schooling decisions respectively,  $\rho$  is the coefficient of correlation between the two equations and  $\varepsilon_1$  and  $\varepsilon_2$  are the respective error terms.

The models to be estimated will be as follows:

$$P(Y_1 = 1) = \alpha + \beta_1 \text{child}X'tics + \beta_2 \text{Parent}X'tics + \beta_3 \text{HHX'tics} + \beta_4 \text{Com}X'tics + \varepsilon \quad (1.8)$$

and

$$P(Y_2 = 1) = \gamma + \delta_1 \text{child}X'tics + \delta_2 \text{Parent}X'tics + \delta_3 \text{HHX'tics} + \delta_4 \text{Com}X'tics + \mu \quad (1.9)$$

Where:  $Y_1$  is 1 if the child is engaged in an economic activity in the labor market and 0 if otherwise, and  $Y_2$  is 1 if the child attends school and 0 if otherwise. The rest of the variables are just as those explained above with the exception of the child characteristics which exclude the educational level of the child.

## 1.6 Organization of the Study

This study comprises eight chapters. Chapter one discusses the research problem, research question, objectives, testable hypothesis and significance of the study; it also discusses the

methodology i.e. the conceptual framework to be used to achieve the objectives of the study and the source of data for the study; this is followed by a review of relevant theoretical and empirical literature in chapter two.

Chapter three discusses the characteristics of child labor in Ghana. Chapter four presents a statistical description of the variables to be used in the estimations. This is followed by chapter five which presents the empirical results and the discussions of the socio-economic factors of child labor i.e. why parents cause their children to work and the determinants of the joint probability of child working and schooling decisions.

Chapter six also presents the empirical results and the discussions of the determinants of child labor supply in Ghana. The empirical results and the discussions for the impact of child labor on labor market outcomes are presented in the last but one chapter. The summary of empirical findings, conclusion and policy recommendations drawn from the findings are outlined in chapter eight.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.0 Introduction**

This chapter reviews sundry literature on the issue of child labor. It begins with a definition of the concept of child labor and then reviews some theoretical literature, where the determinants of child labor are explained. Specifically, we discuss human capital theory, poverty and other hypotheses that try to explain the existence of child labor. This chapter also discusses theoretically the impact of child labor on the labor market. This is followed by a survey of the empirical literature within the framework of the theories discussed.

### **2.1 Child Labor Definition**

There exist significant differences between the many types of work children do. While some are hazardous and morally unacceptable, others are difficult and demanding. Children carry out a wide range of chores and activities when they work. Not all work done by children should be categorized as child labor that is to be targeted for elimination. Children's participation in work that does not affect their health and personal development or interfere with their schooling is generally regarded as being something positive. This includes activities such as helping their parents around the home, assisting in a family business or earning pocket money outside school hours and during school holidays. These kinds of activities contribute to children's development and to the welfare of their families; they provide them with skills and experience, and help to prepare them to be productive members of society during their adult life.

The International Labor Organization (ILO) defines the term “child labor” as work that deprives children of their childhood, their potential and their dignity, and that is harmful to their physical and mental development. It refers to work that is mentally, physically, socially or morally dangerous and harmful to children; and interferes with their schooling by: depriving them of the opportunity to attend school; obliging them to leave school prematurely; or requiring them to attempt to combine school attendance with excessively long and heavy work. In its most extreme forms, child labor involves children being enslaved, separated from their families, exposed to serious hazards and illnesses and/or left to fend for themselves on the streets of large cities often at a very early age.

Whether or not particular forms of “work” can be called “Child Labor” depends on the child’s age, the type and hours of work performed, the conditions under which it is performed and the objectives pursued by individual countries. The answer varies from country to country, as well as among sectors within countries. Official definitions of child labor also vary. Some countries officially define child labor as wage work (e.g. Pakistan) or market work that is harmful to the future well-being of children (e.g. Vietnam).

The ILO's Statistical Information and Monitoring Program on Child Labor (SIMPOC) is a body charged with tracking child labor around the world. Their definition of what exactly is "child labor" varies over time, in part because of controversy over what can be considered harmful. A child laborer is defined by SIMPOC as an economically active child under 12 that works 1 or more hours per week, an economically active child who is 14 years and below, who works at least 14 hours per week or 1 or more hours per week in activities that are "hazardous by nature or circumstance," and a child who is 17 years and below who works in an "unconditional

worst form of child labor" (trafficked children, children in bondage or forced labor, armed conflict, prostitution, pornography, illicit activities) (ILO (2002, p. 25).

According to the Ghana Statistical Service (GSS), the term "child labor" does not encompass all economic activity undertaken by children. It refers to employment or work carried out by children that neither conforms to the provisions of national legislation, such as the Ghana Children's Act, (1998), (Act 560), nor the provisions of international instruments such as ILO Convention Nos. 138 and 182, which define the boundaries of work undertaken by children that must be targeted for abolition (GSS, 2014, p. 7).

The Ghana Children's Act (Act 560), defines exploitative labor as "work that deprives the child of his/her health, education or development". It sets the minimum age for admission into employment at 15 years for general employment, 13 years for light work and 18 years for hazardous work. The Act defines hazardous work as "work posing a danger to the health, safety or morals of a person", and provides an inexhaustible list, including fishing, mining and quarrying, portage or carrying of heavy loads, work involving the production or use of chemicals, and work in places where there is a risk of exposure to immoral behavior.

### ***2.1.1 Worst Forms of Child Labor***

Worst forms of child labor are defined by Article 3 of the ILO Convention (1999a) No. 182 as all practices comprising:

- (a) all forms of slavery or practices similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labor, including forced or compulsory recruitment of children for use in armed conflict;
- (b) The use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic performances;
- (c) The use, procuring or offering of a child for illicit activities, in particular for the production and trafficking of drugs as defined in the relevant international treaties;
- (d) Work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children.

Worst forms of child labor can be categorized into two forms: the unconditional worst forms of child labor and the hazardous work. Sections (a) to (c) of this convention constitute by definition unconditional worst forms and are so fundamentally at odds with children's basic human rights that they are absolutely prohibited for all persons under the age of 18.

Hazardous work is also defined by Article 4 of the ILO Convention (1999a) No. R190 Worst Forms of Child Labor Recommendation as including:

- (a) Work which exposes children to physical, psychological, or sexual abuse.
- (b) Work underground, under water, at dangerous heights, or in confined spaces.
- (c) Work with dangerous machinery, equipment and tools, or which involves the handling or transport of heavy loads.



(d) Work in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes, or to temperature, noise levels, or vibrations damaging to their health

(e) Work under particularly difficult conditions such as work for long hours or during the night or work where the child is unreasonably confined to the premises or the employer.

These forms of child labor are not only the most inherently harmful; they are also the ones that are performed by the most vulnerable children. The boundaries of hazardous work are therefore not always easy to draw, especially when the harm being done to children is not obvious in the short term. Hazardous work has been singled out in the ILO Convention (1973) No. 138 as requiring a minimum age for admission of 18 years or older.

## **2.2 Theoretical Literature**

In this section we discuss some hypotheses that try to explain the existence of child labor; the section also presents a review of the impact of child labor on the labor market.

### ***2.2.1 Determinants of Child Labor***

Child labor can be explained from both the labor demand and supply side, but the analysis of this study will focus mainly on the labor supply side. On the demand side it is argued e.g. by employers that, due to their “nimble fingers”, children become irreplaceable, and as such only children with small fingers have the ability to do certain peculiar activities such as: making fine hand-knotted carpets, plucking delicate fruits without breaking the branches, catching small

fishes from the net. Also only individuals who are physically small like children can climb some small trees. They further argue that children are a source of cost-effective labor due to their low wage level. These reasons notwithstanding, Levison et al. (1996, p. 2) argue that children do not have irreplaceable skills, and that they are only marginally less costly than adults. They report that the reasons why employers prefer them are because they are: less troublesome, not aware of their rights, more willing to take orders, less likely to absent themselves from work, less likely to steal, more trustworthy and can work tirelessly without complaining.

On the supply side of child labor, Canagarajah and Nielsen (1999, pp. 4-9) derived five main hypotheses that explain child labor: the poverty hypothesis, the household composition hypothesis, the capital market hypothesis, the school cost hypothesis and the school quality hypothesis. The theories of human capital investment and time allocation are mostly used in explaining the supply side hypotheses of child labor. In the standard human capital theory, an individual chooses the time and the level of consumption which maximizes discounted expected future utility. Work and school are the main competitors of children's non-leisure time. In terms of child labor, the decision maker is usually not the child but more often the household head, who allocates the time of all household members, hence the standard human capital model will not be sufficient to describe child labor, therefore Canagarajah and Nielsen (1999, pp. 5-6) use an extended human capital model where the household head maximizes the family utility constrained by the fact that the household has no access to borrowing, and also that consumption should exceed a certain subsistence level. In this extended human capital model, child labor would be present in any of the situations below:

- Household consumption is equal to the subsistence level, and the marginal benefits of child labor may or may not exceed the marginal costs of child labor.

- Household consumption exceeds the subsistence level, and the marginal benefits of child labor (earnings and saved costs of schooling) are higher than the marginal costs of child labor in terms of the foregone return to human capital investments.

The first situation is satisfied for households living at the subsistence level, and it explains why child labor may coincide with a quality education system. This situation also explains why poor households make use of child labor.

The second situation would be satisfied if school costs are relatively high, or if the returns to schooling are relatively low. The return to schooling would be low in a situation where the quality of schooling is low or a situation where the expected future demand for skilled labor is low. Thus, child labor is also a consequence of a situation of high demand for unskilled labor.

Poor parents would receive a high marginal utility from child labor income and they would supply child labor. The use of child labor is also a way of supplementing income such that the risk of suddenly falling below the subsistence level of consumption is reduced. This extended human capital framework explains why poverty, school costs and school quality might impact the probability of child labor.

#### ***a. The Poverty Hypothesis***

Basu and Van (1998, pp. 416-422) looked at the economic implication of child labor. In their work they showed that the link between child labor and parental poverty can be mutually reinforcing. They stated that child participation in work activities occurs under the conditions of multiplicity of equilibriums in the labor market. In a one-period model, they show that the type

of activities that households choose for their children are part of any of two stable equilibria, a high-wage equilibrium in which children do not work and a low-wage one in which both adults and children work. They derive their conclusion from two axioms: the Substitution Axiom which hypothesizes that child and adult labor are perfect substitutes and the Luxury Axiom which posits that the household chooses not to cause children to work if household income from non-child source is high enough. The detail of their work is explained below.

In their model, they propose that children can either work or enjoy leisure. Since this leisure has to be paid for by someone, particularly the parents, only sufficiently rich parents can afford this ‘luxury’. Also, child workers are substitutes for adult workers in the labor market, even though each child may be only partly as productive as an adult. This substitutability implies that entry into the workforce by children leads to a fall in wages for adults. These assumptions lead to the possibility of dual labor market equilibria; the “good” equilibrium in which children do not work, thus allowing the adult wages to be high enough to rationalize each household's purchase of child leisure, and the “bad” equilibrium in which all households send children to work. The adult wages remain low from the competition of child workers, and this reinforces the absence of child leisure. At the “good” equilibrium in which adult wages are above the subsistence level, parents have no incentive to send children to work according to the Luxury Axiom. On the other hand, when the labor market stays at the “bad” equilibrium in which adult wages are below the subsistence level, adults have no option but to cause their children to work to sustain the household. In this model, a household resource is the important factor in the determination of child labor.

The “Luxury Axiom” of Basu and Van (1998, pp. 416-422) produces two basic implications. First, they argue that individual households have no control over which outcome

occurs and even if individual parents were to withdraw their own children from work, it would only raise adult market wages slightly; hence, to move the wage sufficiently requires that more children should be withdrawn. Secondly, they argue that child labor is not uniquely tied to the development of an economy and that, as the economy grows, the overall wages increases. Hence in an advanced economy, parents will earn enough and can afford not to send children to work. In this case, a bad equilibrium cannot arise. On the other hand, in a poor economy, where adults' wages are low, a good equilibrium could not be sustained. There may be some economies that are in between these two extremes, and for a given level of development, will be capable of producing either equilibrium. This implies that economic growth may by itself not eliminate child labor in the short to medium run.

Fan (2011, pp. 34-35), in his quest to understand the relationship between the Luxury Axiom and the Substitution Axiom analyzed that, when adults' wage rate is low so that a typical household faces a subsistence constraint in consumption, parents' income turns out to be the key determinant of child labor. In such a situation, the Luxury Axiom holds strictly and children's working time decreases as parents' income rises. On the other hand, when adults' wage rate is relatively high so that the subsistence constraint is not binding, the substitutability between child labor and adult labor now becomes the major determinant of child labor. He further argued that under some circumstances, the substitutability between child labor and adult labor may matter much more than parents' absolute income to children's labor market participation.

Fan (2011, pp. 34-35) further showed that the Luxury Axiom and the Substitution Axiom of Basu and Van (1998, pp. 416-422) are intrinsically linked. Thus, if the degree of substitution between child labor and adult labor is below a certain threshold level, child labor would only exist if adults' wage rate is low enough to render the subsistence constraint binding. Hence, the

Luxury Axiom of Basu and Van (1998, pp. 416-422)) holds if and only if their Substitution Axiom holds weakly. Moreover, he showed that the greater is parents' taste for children's leisure or the greater is a child's rate of return from devoting more time to study in the accumulation of human capital, the less likely will parents send children to work. However, a greater rate of return from investing more financial resources on children's education may increase parents' incentive to cause children to work since child labor increases household income and hence more financial resources on the child's education.

The conclusions of Basu and Van (1998, pp. 416-422) induced Swinnerton and Rogers (1999, pp. 340-355) to challenge the identification of adult income with adult wages. They noted that adults in some households could receive income from both wages and profits, e.g., if they were partners in firms, and so long as an economy was sufficiently developed to generate a good outcome, it could never result in an outcome in which profit-earning households send children to work. This result applies more to the situation prevailing in developing countries, than that of Basu and Van (1998, pp. 416-422); thus not all households send their children to work. However, their conclusion does not essentially refute the possibility of dual outcomes in a single labor market.

Dumas (2007, pp. 301-316) digressed a little from the conclusions of Basu and Van (1998, pp. 416-422) and divided the poverty hypothesis in two: The Subsistence Hypothesis and the Luxury Hypothesis. The Subsistence Hypothesis assumes that parents have a certain subsistence level, and when parents' income exceeds this level they do not allow their children to work. This means that, as long as the household income is below the subsistence level, child labor will be used to supplement it. The Luxury Hypothesis tests whether child leisure is a luxury good, and if

it is, poor parents cannot afford it and would therefore detract from the child's leisure by causing the child to work.

***b. The Poverty Trap and Child Labor***

It is an obvious fact that poverty has been hyped as one of the causes of child labor. However, another branch of the literature thinks the reverse is true, thus child labor rather engenders poverty. Researchers with this opinion have studied child labor decisions for successive generations of particular families. They argued that children who work and do not go to school do not acquire the skills needed to earn decent wages as adults; hence, when they become parents, they also cause their own children to work. In this way another generation also misses out on an education and, in its own turn, cause its own children to work. This vicious cycle which continues across generation is described by Jafarey and Lahiri (2000a, p. 13) as a “poverty trap”.

An elementary model on poverty trap was developed by Basu (1999, pp. 1095-1103), who argues that schooling cannot be undertaken intermittently, since a child should either enroll full-time or not at all. This implies that sending a child to school implies sacrificing an amount of income that the child could have earned by working all those hours. This presents an opportunity cost situation where parents have to choose, but unfortunately only parents with a minimum skill level of their own earn enough to be able to forsake this amount of income. Such parents bequeath a legacy of education and affluence to their descendants. On the other hand, parents who are unskilled earn less and therefore cannot afford to forsake this income and do not send

their children to school. In this situation a legacy of child labor, lack of schooling and poverty persists among all generations.

### ***c. Household Composition Hypothesis***

The household composition hypothesis focuses on the household issues like number of children, age and gender of the members of the household. The decision of the household to allocate children's time is seen as a joint decision which depends on the number of children. In maximizing household welfare, the household decision maker faces a trade-off between the number of children which is the quantity and the educational level of children which is the quality. These two (quantity and quality of children) represent potentially high household income. This hypothesis has been confirmed by some researchers; for instance, Patrinos and Psacharopoulos (1997, pp. 398-400) found an evidence of a positive effect of the number of siblings on the probability that a child will work, but Montgomery et al. (1995) showed that the trade-off between quantity and quality of children was not established in the case of sub Saharan Africa at their time of writing. Some common findings by researchers e.g. Patrinos and Psacharopoulos (1997, pp. 398-400) are that age and age distribution of siblings are very important in explaining the nature and incidence of child labor; also having older siblings in the labor market reduces the probability of younger siblings getting involved in child labor.

### ***d. Capital Market Hypothesis***

The capital market hypothesis can be explained if children are viewed as pure investment goods. According to Canagarajah and Nielsen (1999, p. 9), risk averse parents will diversify the



investments in children's education by investing in formal education by allowing some of the children to get higher education and in informal education in the form of experience by allowing other children get only primary education while others get no education at all. Human capital, financial capital and physical capital are competing investment alternatives, but the human capital market differs from the other two markets in the sense that parents may not have absolute control over the aftermath of an investment in human capital, because the children may leave the household after they have finished their education. When households do not have access to the financial capital market and do not also have physical assets, they may be forced to "take loans" on the human capital market any time they experience an income drop, by withdrawing children from school and letting them work instead. This represents a "loan" in this market. In this way the capital market hypothesis also contributes to explaining child labor.

***e. Credit Market and its Impact on Schooling and Working Decisions***

Another aspect of the literature has studied the trade-off between labor and schooling, for instance, the endogenous growth theory (see e.g. Jafarey and Lahiri, 2000a, p. 8) posits that long-run sustainable growth is made possible by continuous increases in an economy's stock of knowledge. According to this theory, education plays an essential part in the process of knowledge acquisition by disseminating knowledge across the population. This process has spillover effects, thus in an economy where a large percentage of workers are educated, even the uneducated ones become more productive and receive respectable wages. This fact notwithstanding, a high incidence of child labor may interfere with these mechanisms of economic prosperity and growth.

In addition to this, credit markets can affect the trade-off between child labor and schooling. It is an obvious fact that by acquiring at least primary education, children are able to enhance their wage-earning potential later in life. However, any increase in wages may occur only after the schooling process is over, which could take five years at the minimum. During this period, the household forgoes the income the child could have earned by working instead. If households could borrow at reasonable terms against the child's higher future earnings, sending children to work might be unnecessary. In the absence of credit, however, the lost income from the child's formative years could very well tilt the balance against schooling. One interesting feature of this line of reasoning is that it disentangles the child labor decision from the labor market conditions faced by adults. However, if credit markets allow households to borrow against their children's future earnings, child labor will cease to exist so long as the returns to education are high enough. No matter how poorly paid they themselves are, parents will always prefer to send children to school and borrow against their future earnings, rather than send children to work (Jafarey and Lahiri, 2000a, p. 9).

Baland and Robinson (2000, pp. 667-673) have also given some theoretical explanations on how households take decision on children's participation in schooling and labor activities. They studied households' decision mechanism to either cause their child to work or to school. In a two-period model taking into account the future returns from investment in children education, they demonstrate that parents will choose a socially efficient level of child labor if they are not subject to borrowing constraints or if they can make a bequest or receive a transfer from their children. But, since parents lack access to the credit market and if there is neither transfer nor bequest possibility, they will engage their children in the labor market at an inefficiently high level. They also developed two new arguments about why child labor exists in equilibrium

despite the fact that it may be socially inefficient. According to them child labor is inefficient when it is used by parents as a substitute for negative bequests, i.e. transferring income from children to parents, or as a substitute for borrowing, i.e. transferring income from the future to the present. They suggested that the inefficiency cannot be solved through intrafamily contracting since such contracting would be either not self-enforcing or illegal.

Jafarey and Lahiri (2000b, pp. 5-20), in a similar investigation, examined the role of the interest rate in the child labor decision. According to them, the household head who calculates the fiscal considerations for the return to education, discounts the future increase in incomes of the child back to the present by applying an appropriate discount rate. The head then compares this discounted return with the wages currently lost from the child not working. If the rate at which future incomes are discounted is higher, then the tendency to choose labor over schooling will be greater. When households have access to a credit market, then the discount rate will simply be equal to the interest rate on borrowing, thus the lower the interest rate on borrowing, the lower will be the discount rate. In a situation where the household do not have access to any credit, the discount rate will depend on factors such as household wealth, parental income and subjective attitudes towards the future. Households with low levels of wealth and low parental incomes will be faced with a higher discount rate and will therefore be discouraged from sending their children to school.

### ***2.2.2 Child Labor and its Impacts on the Labor Market***

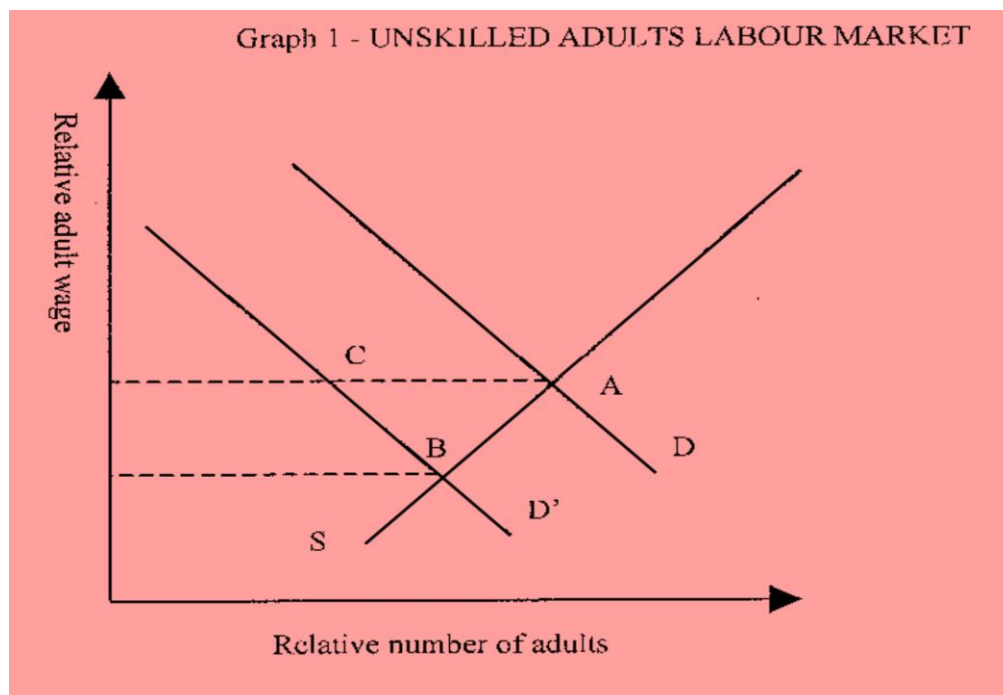
In this subsection, we review the theoretical work done by Galli (2001, pp. 13-20) on the impact of child labor on adults' unemployment and wage rate. According to Galli (2001, pp. 13-20),

there is a link between the idea that child labor might depress adult wages and the idea that child labor may create adult unemployment. She argued that if children work and have a lower imputed reservation wage, they either displace adults from their jobs, hence increasing adult unemployment, or lower the adult wage rate. These two outcomes are subject to the condition that children are substitutes for adults or vice versa. She analyzed the impact of child labor on the labor market focusing on unskilled adult workers based on the evidence that child labor is essentially unskilled

Figure 2.1 represents an imaginary labor market for unskilled adults, showing their share in the labor force on the horizontal axis and their wage rate relative to the economy's average wage rate on the vertical axis. Assume from the beginning that the average wage rate in the economy is constant, and that labor supply and labor demand have the standard upward sloping and downward sloping shapes respectively.

Assume now that an exogenous increase in the relative number of children in labor force or an exogenous decrease in children's relative wage rate takes place. This change will reduce the labor demand for unskilled adults at any given relative wage. In Figure 2.1 this is represented by the labor demand shifting to the left (from  $D$  to  $D'$ ). The shift in demand can therefore produce two effects: firstly, if the wages of unskilled adults relative to other workers are downwardly flexible, then the entry of children into the labor force will cause the unskilled adults relative wages to fall and the equilibrium would move from  $A$  to  $B$ , with both lower relative wage rates and lower relative employment of unskilled adults.

**Figure 2.1 Impact of Child Labor on Unskilled Adults with Upward Slopping Supply Curve**



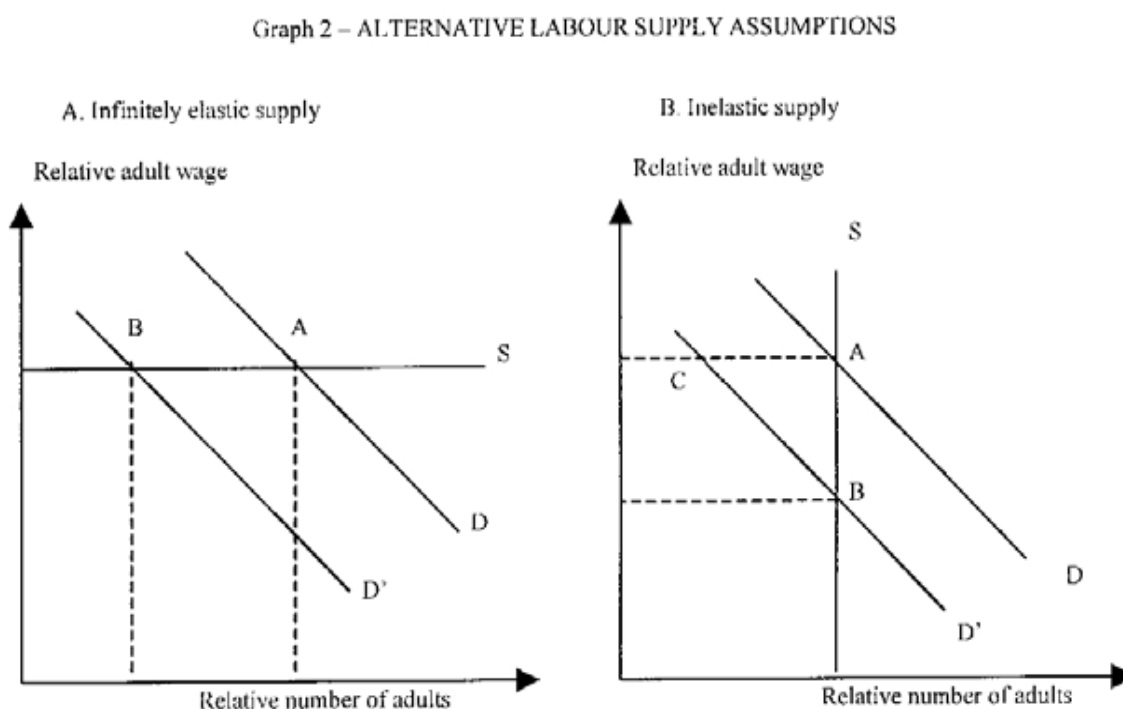
*Source:* Galli (2001, p. 18)

Secondly, if the wages of unskilled adults relative to other workers are not downwardly flexible, for instance in case of a minimum wage legislation, then employers will be unwilling to absorb all the adults who seek jobs, but rather employ children instead. In this situation the continued high relative wage of adults would induce adults to stay in the labor market in the hope of finding employment. As a result, the equilibrium would move from A to C and unemployment will increase among the unskilled adults. This is represented by the distance AC in Figure 2.1.

However, it should be noted that the impact of child labor on the labor market essentially depends on the slope of the labor supply curve. If the supply of unskilled adults is infinitely

elastic as in Figure 2.2 graph 2A, then the shift in labor demand will cause a fall in the relative employment of unskilled adults leaving their relative wage rate unchanged. On the other hand, if the labor supply of unskilled adults is perfectly inelastic as in Figure 2.2 graph 2B, then the shift in labor demand can produce two effects: First, a fall in unskilled adults relative wage rate with no change in their relative employment level, if the unskilled adults wage rate is free to drop. Second, an expansion of unemployment among unskilled adults if their wage rate is not allowed to drop (say by minimum wage legislation), shown by distance AC in Figure 2.2 graph 2B.

**Figure 2.2 Impact of Child Labor on Unskilled Adults with Elastic and Inelastic Supply Curves**



*Source:* Galli (2001, p. 19)

The conclusions above were made on the condition that children are substitutes for adults or vice versa. If we now assume that children and adults are complements rather than substitutes, then the effect of child labor on the labor market will be the opposite in all situations (different supply elasticities). Thus more child labor will induce more adult employment and/or higher adult wages (Galli, 2001, p. 20).

## **2.3 Empirical Literature Survey**

There exists a large array of empirical literature on child labor and related issues in general. The results from studies on child labor are quite interesting. We group the review into thematic areas, by looking at them in terms of poverty, working and schooling and then in terms of the economic repercussion of child labor.

### ***2.3.1 Child Labor and the Poverty Hypothesis***

From the poverty side of child labor, there are diverging views; some researchers argue that poverty is the main cause of child labor and others disagree to this claim. Amin et al. (2004, pp 876-892) used income quintiles as a means of measuring family poverty and added child and family characteristics to their model. They estimated the likelihood that a child in Bangladesh will work using separate logistic regression models for younger and older boys and girls in urban and rural areas. Their findings support the notion that a family's poverty status affects the probability that a child will work, and that keeping children off work is a luxury these families cannot afford. This was also confirmed by Kufogbe et al. (2005) who examined the practice of

child labor in fishing in selected communities in the Gomoa and Awutu-Efutu-Senya (AES) districts in the Central Region of Ghana. The results of their study showed that besides parental poverty and lack of support for provision of basic needs, children are easily attracted into fishing in order to provide basic needs such as school uniform, writing materials and bags, pencils and erasers for themselves. They also found out that fishing has become a “way of life” in which children are naturally attracted to landing beaches to gain some income.

Bhalotra (2003, p. 23), investigated the hypothesis that child labor is compelled by poverty or that the child’s income contribution is needed by the household in order to meet subsistence expenditures. Using a large household survey for rural Pakistan, the study estimated labor supply models for boys and girls in wage work and identified negative wage elasticity for boys and an elasticity that is insignificantly different from zero for girls. Thus, while the evidence was consistent with boys working on account of poverty compulsions, the evidence was ambiguous in the case of girls.

Ray (2000a, p. 364) also used data from the Pakistan Integrated Household Survey of 1991 (PIHS) and the country’s poverty line. The findings from the study showed that when a Pakistani household falls into poverty, it substantially increases its children's involvement in outside, paid employment by about 500 hours annually for each child.

Some researchers disagree with the notion that poverty is the main cause of child labor; their main reason for disagreeing is because they do not find any evidence to support the poverty hypothesis. Example of such researchers are Bhalotra and Heady (2005, pp. 20-24), who showed that, household income has no significant impact on work for both boys and girls in Ghana, and also for girls in Pakistan. Dumas (2007, pp. 301, 320, 324), also found that in rural Burkina Faso,



children do not provide labor to meet households' subsistence needs and that child leisure is a normal good. This accords with the view of Nielsen (1998, pp. 15-22), and Canagarajah and Coulombe (1997, pp. 13-26), who did not also find a positive relation between poverty and child labor, and thus debunks the claim that poverty is the main determinant of child labor. Sasaki and Temesgen (1999) do not also find any significant relationship between household income per capita and child work.

### ***2.3.2 Child Work and Schooling Decisions***

In some previous studies, schooling and child work decisions were treated separately by researchers. For instance, Chao and Alper (1998) analyzed the access to basic education in Ghana for children between 10-14 years of age. They identified two supply-side factors that negatively affect school participation; these are distance to primary school, and high pupil-teacher ratio at the primary level. They also found that access to drinking water and roads are some demand-side constraints that affect enrollment and drop-out rates. Finally, according to them, some key factors in determining the likelihood of children attending primary school were household income, demand for child labor, and parental education. Some common factors found by researchers to affect schooling decision in Ghana are fare cost, distance to school and monetary cost of schooling. See e.g. Nielsen (1998, pp. 15-22) and Canagarajah and Coulombe (1997, pp. 13-26).

In most developing countries, households face direct costs of schooling such as tuition fees, expenditures for books, supplies, uniform, fare, private tutoring, and miscellaneous costs. High cost (direct and indirect) of sending children to school may force poor households to take

their children out of school. According to Grootaert (1998), there is evidence from Uganda and Pakistan on direct costs discouraging household investment in schooling. With respect to indirect costs of schooling, Rosenzweig and Evenson (1977, p. 1067) were among the first to discuss the possibility of children's opportunity costs discouraging household schooling decisions.

In recent times, researchers have analyzed working and schooling decisions together. For instance, Nielsen (1998, pp. 15-22), analyzed child labor and schooling decision in Zambia and established a gender gap for the schooling decision as boys are found more likely to go to school than girls. However, there seem not to be any gender differences in the working decision. This assertion was also confirmed by Canagarajah and Coulombe (1997, pp. 13-26), who also found evidence of a gender gap in schooling, as boys have a higher probability of attending school than girls, but again, there was no substantial difference in the tendency to work by children in Ghana. Sasaki and Temesgen (1999), who analyzed child labor in Peru, also established a gender gap in schooling decision, thus: girls are less likely to attend school than boys. In addition, they also found that girls in Peru are more likely to work than boys, and that the work of the girls is used to subsidize the human capital accumulation of their brothers.

Some researchers directly analyze the impact of child labor on school performance. For instance, Gunnarsson et al. (2006, pp. 46-48) used a unique data on 3<sup>rd</sup> and 4<sup>th</sup> graders in 11 Latin American countries to estimate the impact of child labor on test scores. Their estimation results showed that child labor lowers math scores by 7.5 percent and language scores by 7 percent. This result is consistent with that of Heady (2003, pp. 26-32), and Rosati and Rossi (2001, pp. 29-34) who have also found some evidence that child labor lowers primary school test scores in developing countries. Heady (2003, pp. 26-32) found that child work had a substantial effect on learning achievement in reading and mathematics in Ghana, while Rosati and Rossi

(2001, pp. 29-34) found that longer hours of child work led to poorer test scores in Pakistan and Nicaragua. Akabayashi and Psacharopoulos (1999, pp. 120-140) also showed that, children's reading competence as assessed by parents decreases with child labor hours.

Others have also concentrated on the impact of child labor on school enrollment or attendance, but the evidence found are mixed, for instance Levy (1985, pp. 788-789), Rosenzweig and Evenson (1977, pp. 1074-1077) and Akabayashi and Psacharopoulos (1999, pp. 120-140) showed that child labor markets reduced school enrollment and attainment, Psacharopoulos (1997, pp. 377, 383), also reports that child labor causes a reduction in a child's educational attainment by about 2 years of schooling. However, Ravallion and Wodon (2000, pp. 3-9) and Patrinos and Psacharopoulos (1997, p. 402) disputed this fact by showing that child labor and school enrollment were not mutually exclusive activities but could even be complementary activities. Patrinos and Psacharopoulos (1997, p. 402) argued that while work may have harmful effects on schooling, without work many children may not be in school at all. According to them the economic situation makes child work all the more necessary, and therefore, a ban on child work may not necessarily be successful, without first improving the situation of the poor. This result is consistent with the findings of Heady (2003, pp. 26-32), who found that child work had little effect on school attendance in Ghana.

### ***2.3.3 Labor Market Effects of Child Labor***

In recent years, researchers have been interested in the link between child labor and the labor market. Doran (2012, pp. 17-20), using data from rural Mexico wanted to investigate how child labor affected demand for adult labor. The author concluded that decreasing child farm work is

accompanied by increasing demand for adult labor; hence, employers substitute adults for children. Anker et al. (1998) collected the findings of five studies on child labor in different industries of India. In all concerned industries they found that children do not provide irreplaceable skills and that most of the work activities performed by children can also be performed by adults, making child labor and adult labor substitutes. This finding is also confirmed by Diamond and Fayed (1998, pp. 62-70). They found that children and adult females are substitutes in Egyptian industries.

On the contrary, some other researchers have shown that child and adult labor are complementary. For instance, Bhukuth and Ballet (2006, pp. 596 - 598), showed that child labor in the brick kiln industry in India is not a substitute for adult labor but is rather complementary. Cockburn (2000, pp. 21-29) also showed that child labor in Ethiopian family-based enterprises is not in competition with adult labor, but rather parents use child labor to increase household's earnings; hence child and adult labor are complementary. This finding was confirmed by Diamond and Fayed (1998, pp. 62-70) who showed in their work that children and adult males are complements rather than substitutes in Egyptian industries.

It was observed by Galli (2001, pp. 13-20) that while children do not provide irreplaceable skills and can easily be substituted for by adults, the available evidence suggests that they compete with adult females more than with adult males for employment in industries. However, outside the industrial sector, children seem to complement rather than substitute for adult work. So the presumed negative impact of child labor on adult unemployment or wages is restricted to the industrial sector and is likely to be of limited extent due to possible counter-effects on male employment. Galli (200, pp. 13-20) further concluded that as long as adults and children are substitutes, employers would prefer hiring children on the grounds of lower wages,

hence, in the industrial sector, child labor can have a negative impact on adults' employment and wage rate, in particular for women. However, it was noted that, whenever adults and children are paid on a piece rate basis, which is usually common in many industries, child labor does not have impact on adult wages. On the other hand, if adults and children are complements rather than substitutes, then a reduction in child labor would not produce an exactly proportional increase in adult employment or wages; this is because, if children were removed from work, employers would eliminate the job or adopt more sophisticated technology to replace the workplace. Also, where the employers' profitability is based on children's lower wages, eliminating child labor would put them out of business and automatically destroy the jobs they were offering.

#### ***2.3.4 Intergenerational Transmission of Child Labor***

There is few empirical evidence in the literature and none at all in Ghana on how child labor perpetuates poverty from one generation to another, or on how parents who were child laborers are more likely to have their children work as well. One might argue that parents who worked as children are more likely to have under-invested in schooling and become poverty trapped and hence would expect their children to work as well. However, the effect of the parents having been child laborers themselves has not been widely explored in previous literature. To the best of our knowledge, the only studies available on this issue are Wahba (2000, p. 15 and 2001, p. 16) and Emerson and Souza (2003, pp 3-10) using data from Egypt and Brazil respectively. The results from both studies showed that parents who have been child laborers themselves are more likely to cause their children to work. For example, evidence from Wahba (2000, p. 15 and 2001, p. 16) showed that children are twice as likely to work if their parents have been child laborers.

## 2.4 Summary

In this chapter we have provided a review of both theoretical and empirical literature on child labor. In the theoretical survey, we provided some theories that have been used to explain child labor, and also looked at the impact of child labor on the labor market. A review of the empirical works provided evidence that suggests the existence of child labor in developing countries.

The review of the empirical works in Ghana suggested that there are diverging views, on the usually hypothesized relationship between child labor and poverty. With respect to child work and schooling decisions, there seems to be some common findings, thus there exists a gender gap in terms of schooling decisions, but when it comes to working decisions there are different views. There is also very scanty literature on child labor supply, especially in Africa and in Ghana in particular.

Edmonds (2008, p. 37) noted that whether child labor depresses adult wages is a critical question in the child labor literature, but despite the critical nature of this question, direct evidence on whether child labor affects adult labor markets is very scarce<sup>3</sup> and non-existent, especially in Ghana. The review of literature has also showed that no work has been done in Ghana to analyze the economic repercussion of child labor on labor market outcomes.

This study is different from those already done in Ghana in the sense that it uses a data set that had its focus on child labor and as such provides very reliable information for policy purposes. The study also fills the gap in the Ghanaian literature by analyzing the impact of child labor on the Ghanaian labor market, which to the best of our knowledge has not been done before in Ghana. Finally, the issue of whether child labor is an intergenerational phenomenon has not been

---

<sup>3</sup> See also Doran, (2012, p. 3).

investigated in Ghana and very scarce in the entire strand of literature. Our study therefore contributes to the literature by e.g. adding to the scarce evidence on intergenerational links and provides new evidence for Ghana.

## **CHAPTER THREE: REVIEW OF CHILD LABOR IN GHANA**

### **3.0 Introduction**

The principal focus of this chapter is to discuss child labor in Ghana. The chapter begins with a discussion of child labor in Ghana overtime and within regions; it continues with the review of the characteristics of child labor by discussing it in terms of its nature and the conditions of work by the children, also some statistics on the occupational distribution of the working children in terms of age, sex, locality of residence and regions are presented.

Furthermore, school attendance rate in Ghana overtime is discussed by the chapter; moreover, it presents what constitutes the worst forms of child labor and its existence in Ghana. Finally, the chapter carries out an overview of some legislations and policies implemented by the Ghanaian Government to eradicate child labor in Ghana. The extent of the discussions in this chapter is limited by the information available.

### **3.1 Incidence of Child Labor Overtime and within Regions**

Child labor in Ghana dates back as far as the colonial period when Great Britain was still ruling the then Gold Coast, but official statistics on the incidence, extent and magnitude of child labor were not available in Ghana until recently. The Ghana Child Labor Survey conducted in 2001 was the first nationwide data collection on children's work in Ghana; this survey revealed that child labor was prevalent in all the 10 regions of Ghana, and that 2.47 million children aged 5-14 years, representing 40 percent of the estimated 6.36 million children who were in that age group were economically active with some engaged in the worst forms of child labor.



Prior to this first child labor survey in 2001, the Ghana Living Standards Survey (GLSS) rounds 1 to 3, viz. GLSS1 (1987/88), GLSS2 (1988/89) and GLSS3 (1991/92) which were nationwide surveys, also gave some estimates for the incidence of child labor. The round one revealed that 30.5 percent of the children interviewed were engaged in child labor by the year 1988, this Figure reduced to 22.4 percent in the second round in 1989 and then increased again to 28 percent in the third round by 1992.

The United States Department of labor estimated that in the year 2000, 24.2 percent of the children between the ages of 5-14 years were engaged in economic activity, this constituted 24.5 percent of total boys and 24 percent of total girls. In 2005/2006, estimates from the GLSS5 showed that 13 percent of the children between the ages of 7-14 were economically active. The GLSS6 also estimated in 2012/13 that 24.3 percent of the population aged 5-14 was economically active. These statistics for the incidence of child labor over the years has shown that child labor existed in Ghana for years and is still significant to date.

There have been differences in the regional concentration of child labor in Ghana. Identifying the spatial concentration of child labor is important to ensure effective planning of interventions and programs for children. The GLSS6 Child Labor Report estimated that child labor was higher in the Upper East and Upper West regions than all the other regions. In table 3.1, we see that 45.1 percent of the total number of children in the Upper West region and 44.5 percent of the total number of children in the Upper East region were involved in some economic activity. This was followed by the Brong Ahafo region with 41.7 percent of its children working, and then by the Eastern region with 36.6 percent. The region with the least number of working children is the Greater Accra region with only 6.9 percent of its total children engaging in some economic activity.

**Table 3.1: Incidence of Child Labor by Regions in 2012/13**

Region	Total children	Children in Economic Activity	Percentage
<b>Western</b>	838,313	225,702	26.9
<b>Central</b>	793,125	101,481	12.8
<b>Greater Accra</b>	1,204,870	83,328	6.9
<b>Volta</b>	766,836	245,094	32.0
<b>Eastern</b>	920,812	336,935	36.6
<b>Ashanti</b>	1,727,891	537,057	31.1
<b>Brong Ahafo</b>	916,757	382,738	41.7
<b>Northern</b>	891,273	278,445	31.2
<b>Upper East</b>	362,761	161,388	44.5
<b>Upper West</b>	274,964	124,010	45.1

*Source:* GLSS 6. Child Labor Report

A look at the regional concentration of the incidence of child labor suggests that more anti-child labor programs should be organized in the highly child labor prone regions like Upper West, Upper East, Brong Ahafo and Eastern regions.

## **3.2 Characteristics of Child Labor in Ghana**

In this subsection we discuss the characteristics and the nature of child labor in Ghana. The section mostly reviews the two child labor reports from the child labor survey conducted in 2001 but written in 2003 and that of the GLSS6 child labor report written in 2014, i.e. (GSS 2003, and GSS 2014). The discussion will be done in terms of the conditions of work by children, occupational, regional, sex and age distributions of child labor.

### **3.2.1 Nature and Conditions of Work**

According to the Child labor report in 2003, about 57 percent consisting of 1,128,072 of the working children were engaged in agriculture/forestry/fishing, while 21 percent worked as hawkers and street vendors, selling iced water, food and other items, 11 percent engaged in general laborer work, such as washing of cars, fetching firewood and water, pushing trucks by usually the males, and carrying goods as porters by mainly the females. The report showed that 1,338,794 of the working children making about two-thirds were part-time workers, and about a third of these children were in full-time and permanent employment.

In terms of earnings, it was revealed by the report that a significant proportion thus, 88 percent of the working children were unpaid family workers, and apprentices, while 5.9 percent were own-account workers or self-employed. For the 12 percent who received payment, 36.7 percent were paid daily and 28.5 percent were paid at piece rates. 80 percent of the children received payment themselves, while the families of the rest of the 20 percent received their payment on behalf of the children. The GLSS5 report showed that for the year 2005/2006,

almost all of the children (97.8 percent) were unpaid family workers; this was the same in 2012/2013 as shown by the GLSS 6 report that majority of the children were engaged in unpaid family business.

In terms of hours worked, it was estimated and showed by the Child Labor Report in 2003 that 68.7 percent of the children worked between two and five hours a day. Estimates from the GLSS5 also showed that in 2005/2006, 46.7 percent of the working children were engaged for less than 20 hours per week, whilst 33 percent worked for more than 20 hours but less than 40 hours per week. In 2013, estimates from the GLSS6 showed that 55.1 percent of the children worked for an average of 1-14 hours a week while 34.8 percent worked for 15-42 hours a week.

### ***3.2.2 Occupational Distribution of Child Labor***

The child labor report in 2003 estimated that the main occupations of the working children, as shown in Table A3.2 in the appendix, were agriculture/ fishing/forestry in which 57 percent of the children were found, this was followed by sales with 20.7 percent of the children, then other general workers such as truck-pushers, porters, laborers and driver-mates with 11 percent and then by production with 9.5 percent of the total children. The occupation with the least percentage of children was the professional work which had only 0.1 percent of the children.

In terms of age we see from the table that while the proportion of agricultural workers decreased with age, the proportion of production and other general workers increased with age. This is an indication that younger children were used as unpaid labor in agriculture, but as these children grew older they went out to seek paid non-farm labor.

The major occupation for both males and females was Agriculture/Fishing and Forestry. The report showed that more boys were in this occupation than girls, thus 69 percent for boys and 44 percent for girls. Another major occupation for the girls was sales with 30.4 percent of the girls in this occupation.

In the urban areas sales was the predominant occupation with 48.7 percent of the children, followed by production work with 17.2 percent, while in the rural areas, agricultural work was predominant with 67 percent of the children in the rural areas. Agricultural work was also predominant in all regions except Western and Greater Accra. The majority of working children in Western region were driver-mates, porters, truck-pushers and laborers with 51.6 percent. In Greater Accra, sales workers were dominant with 39.4 percent.

The occupational distribution of working children did not change much over the years. The GLSS6 report on child labor written in 2014 showed similar trends in the occupational distribution. The only difference is that the classification of the occupations was changed and grouped into technicians and associated professional workers, service/sales workers, skilled agriculture/fisheries worker, craft and related trades workers, plant/machine operators and assemblers, elementary occupation and all other occupation.

Table A3.3 in appendix presents information on the occupation of the children who were engaged in an economic activity during the period 2012/2013. As indicated in the table, the majority of the children making up 76.8 percent worked as skilled agriculture and fishery workers while 14.9 percent worked as service and sales workers. Less than 5 percent worked as craft and related workers, thus 4.2 percent and 3.9 percent were in elementary occupations.

In terms of age group, the table shows that a greater proportion of children in all age group worked as skilled agriculture/fishery workers, with 84.2 percent of children within the age group 5-7 years, 81.1 percent of children within the age group of 8-11 years and 76.4 percent of children within the age group of 12-14 years. The next occupation engaged in by the children in all age group was the service and sales work, with 9.9 percent of children within the age group 5-7 years, 13.7 percent of children within the age group of 8-11 years and 16.2 percent of children within the age group of 12-14 years. This shows that the proportion of agricultural workers decreases with age but that of the service and sales workers increases with age.

In terms of sex, the table shows that a higher proportion of boys were engaged as skilled agriculture/fishery workers than girls, thus 83.2 percent for boys and 69.8 for girls. On the other hand, the proportion of girls engaged as service and sales workers was higher than boys, thus 21.4 percent for girls and 8.9 percent for boys.

With regard to urban areas, the table shows that 50.7 percent of the children in these areas were engaged as skilled agriculture and fishery workers while 35.4 percent were into service and sales. In Accra, however, almost three-quarters, thus, 73.2 percent of the children were engaged in service and sales activities, with an additional 16.1 percent engaged in elementary occupations. The proportion of children engaged in agricultural activities in other urban areas was 55.9 percent while service and sales workers constituted 31.5 percent.

In the rural areas, more than four out of five children, making 86.9 percent were engaged as skilled agriculture/fishery workers while those who were engaged in service and sales accounted for 6.9 percent. In terms of the ecological zones, the proportion of children who were engaged in agricultural activities was higher in rural savannah and rural forest zones than in the

rural coastal zone. This constituted 93.9 percent children in the rural savannah, 83.2 percent in the rural forest and 65.8 percent in the rural coastal.

At the regional level, more than half of the working children were engaged as skilled agriculture and fishery workers except in the Greater Accra region where only 7.2 percent were engaged in this occupation. On the other hand, a higher proportion of children making up 68.8 percent in the Greater Accra region were engaged as sales and service workers. These are likely to be children who work or sell along the streets.

The review of the two child labor reports has shown that there has been some consistency in the occupational distribution of working children in Ghana. Agriculture/fisheries/forestry has been the dominant occupation for child workers, this is followed by the service and sale work and then by other general workers such as truck-pushers, porters, laborers and driver-mates.

### **3.3 Child Labor and School Attendance in Ghana**

Work and school are the two main contenders of a child's time. Most children usually spend their childhood years in school to acquire some skills; others do not attend school but only work and some children spend their childhood years working in addition to schooling. Children in Ghana are no exception; there are children in Ghana who combine work and school. For instance, estimates from the child labor report in 2003 i.e. (GSS, 2003) revealed that 1.59 million children making 25 percent of the total children were economically active while still in school.

Education and child labor are interlinked, and understanding how both of them interplay is critical to enacting policies that can help eradicate child labor. Decisions about the education

of children are taken at the household level on the basis of relative cost and benefits, resource availability and other cultural and social characteristics. When children undergo full education, the use of their time is geared towards studying and, therefore, they are less likely to be available for other activities including child labor. It is therefore necessary to discuss the education of children within the child labor age bracket.

School attendance rates have evolved over time in Ghana. Estimates from the GLSS1 show that school attendance rate was 58.6 percent in 1987, this increased to 68 percent in 1988 as estimated by GLSS2 and then to 72.7 percent in 1992. Within this period, the girls' school attendance increased from 53 to 68 percent, while that of boys increased from 64 to 76 percent. There were also locational differences in the school attendance rate for the 1987 to 1992 period. While urban schooling attendance rates for children within 5-14 years age group increased from 68 to 83 percent, the rural rates increased from 53 to 67 percent.

The trend in school attendance rate shows that there has been continual increase. Estimates from the child labor survey in 2001 as reported by GSS (2003) revealed that 76.5 percent of the children interviewed were attending school, whereas 17.6 percent of the interviewed children did never attend school. In terms of regional differences, the survey showed that more than 80 percent of children in all the regions, except the three northern regions (Northern region, Upper East and Upper West) were attending school. The proportion of children who were attending school was lowest for the Northern Region, viz. 51 percent. The gender gap continued to exist since more boys than girls for all the age groups were attending school. The proportion of boys who were attending school was 82.8 percent while that for girls was 75.7 percent.



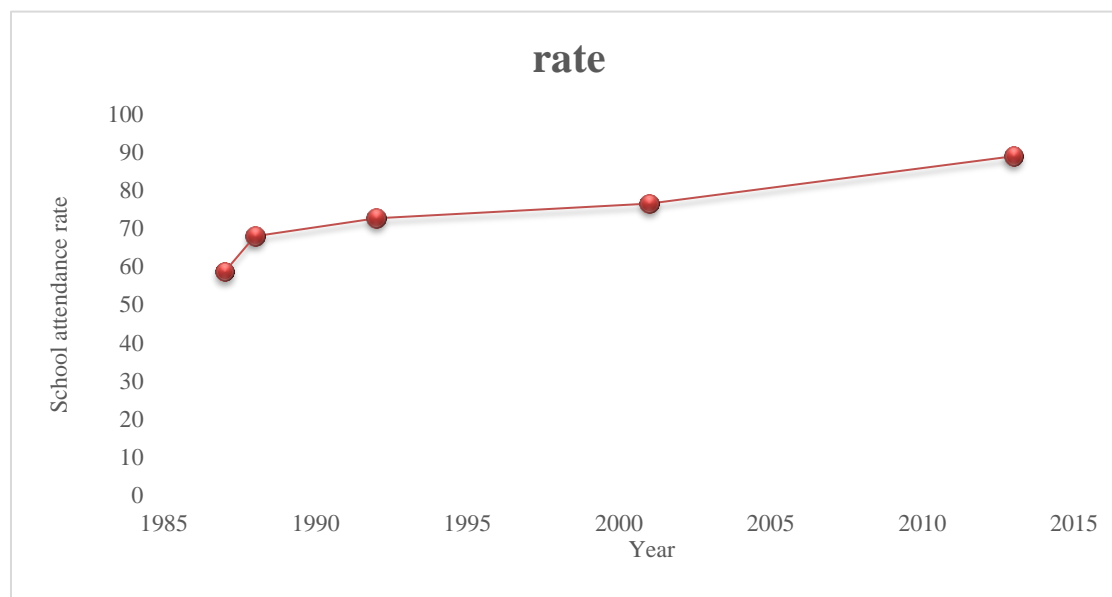
By 2012/2013, the school attendance rate had increased significantly, the Ghana Child Labor Report in 2014 reported that almost nine in ten children making 88.9 percent of all children involved in the survey were attending school with only 5.9 percent of them never being to school. Even though the gender gap narrowed a bit, the report showed that it still existed. The proportion of boys was slightly higher than that of girls, with 89.4 percent for boys and 88.3 percent for girls. This persistent gender gap is an indication that more effort is needed not only in sending female children to school but, more importantly, also ensuring that they stay in school.

The regional differences continue to suffice, estimates from the GLSS6 shows that with the exception of the Volta region, which had a school attendance rate of 9.2 percent, the proportion of children who were in school was higher for those in the southern regions than the northern regions. The school attendance rate ranged between 90.9 percent and 93.1 percent for the southern regions, but was only 10.4 percent for the Upper West region and 25.7 percent for the Northern region. Figure 3.1 shows the trend of school attendance in Ghana overtime.

All these statistics and a look at Figure 3.1 indicate that there has been a positive trend in school attendance rates despite the existence of child labor. However, these Figures do not give much comfort since there are still some children in the school age population who do not attend school, and even some of those attending school combine it with work.

In 1992, the GLSS3 survey estimated that out of the total number of children who were working, 66 percent were also going to school and 90 percent were involved in household chores. 20 percent of boys and 17 percent of girls were observed to do both, thus, working and going to school.

**Figure 3.1: School Attendance Rate Overtime**



*Source:* Computed by Author from GLSS1, GLSS2, GLSS3, GLSS5 and GLSS6.

Also, estimates from the GLSS6 survey showed that more than four out of every five children, thus 82.1 percent of children who engaged in an economic activity in 2013 also attended school. If school attendance shows an increasing trend and yet still child labor exists, then it is necessary to know at which times of the day these economic activities take place in order to tell whether child labor can affect school performance. Table A3.4 in the appendix presents the times of the day activities of working children take place.

We can observe from Table A3.4 that the majority of working children usually worked during the daytime between 6 a.m. and 6 p.m., thus, 61.7 percent. 1.2 percent of working children were reported to be working in the night, contrary to the existing Children's Act which does not encourage children to be engaged in night work. 4.1 percent of the working children worked both in the daytime and at night, while 31.0 percent worked on weekends.

The table further reveals that for all the periods of activity, the proportion of girls was higher than boys except for those who worked on weekends. Also, the proportion of girls working at night was higher than that of the boys, thus 1.4 percent of girls and 0.9 percent of boys. Majority of children in the age groups 5-7 and 8–11, thus 59 percent of the children in these age groups worked during the day.

In terms of locality, we see from the table that a greater proportion of working children in the rural areas were engaged during the day than those in the urban areas, thus, 63.8 percent of the rural dwellers and 56.3 percent of the urban dwellers. Within the ecological zones, the rural savannah had the highest proportion of children working during the day time with 74.6 percent. For the children in Accra, 48 percent of them worked during the day and 36.7 percent of these children sometimes worked during the day and sometimes during the night while 5.9 percent worked on weekends.

Even though most working children work during the day, we cannot actually say that their school performance will be affected by their work unless proper analysis is made, but we can say that a child's work may interrupt his/her school attendance.

### **3.4 Legislations and Policies Implemented so far to Eradicate Child Labor in Ghana**

Since the 1990s, the Ghanaian government has carried out numerous initiatives to protect children from exploitative and hazardous work. It has implemented legislative reforms,

developed interventions all in the quest to fight child labor. In this section we discuss some of legislatives and policies implemented by the Ghanaian Government to eradicate child labor.

### **3.4.1 Legislations on Child Labor in Ghana**

Ghana has a quite liberal child labor law. The section 16 of the constitution of the Republic of Ghana 1992 prohibits slavery and forced labor, section 24 states that it is the right of any person “to work under satisfactory, safe and healthy conditions”. Section 28 also assures children “the right to be protected from engaging in work that constitutes a threat to their health, education or development”. The government of Ghana in 1998 passed the Ghana Children’s Act (Act 560) to strengthen the legal protection of children. The Children’s Act brought together child-related laws from previous national legislation and it also included amendments designed to meet the standards of the United Nations and of the International Labor Organization, (Zdunnek et. al., 2008, pp. 7-12). This act prohibits exploitative child labor that deprives children of health, education and development.

Ghana has ratified several international conventions relevant to the rights of children and their protection from worst forms of labor. These conventions include; The African Charter on the Rights and Welfare of the Child in 1997; The United Nations Convention on the Rights of the Child in 1990 and the International Labor Organization (ILO) Convention on the Worst Forms of Child Labor in 2000. Article 32 of the Convention on the Rights of the Child recognizes the right of children to be protected from economic exploitation and from work which is likely to be hazardous and interferes with their education or is harmful to their health or physical, mental, spiritual, moral or social development. In 2003, the Ghanaian Parliament also

ratified the Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflicts.

The Government of Ghana has passed many other acts and legislations that provide for the protection of children's rights in Ghana, some of these include; the 1998 Criminal Offences Amendment Act (Act 554) and the 2003 Juvenile Justice Act (Act 653). Also in 2005, it passed the Human Trafficking Act (Act 694). This Act includes prostitution, forced labor, slavery or practices similar to slavery and the placement of children where exploitation by another party is the motivating factor for trafficking.

### ***3.4.2 Policies on Child Labor in Ghana***

Many policies have been initiated and implemented by the Government of Ghana to fight child labor. In 1992, the Government initiated the ILO International Program on the Elimination of Child Labor (IPEC) with the goal of eliminating child labor by strengthening national capacities for addressing the problem. The Memorandum of Understanding with the ILO was signed in 2000. Still in 2000; a national Steering Committee on Child Labor was established.

Ghana also takes part in an ILO/IPEC Time-Bound Program. This Program seeks to link action against child labor with national development strategies, predominantly poverty reduction and employment promotion. The ILO/IPEC's support to the Ghana National Child Labor Elimination Program focuses on several strategic areas, these include: law enforcement, mobilization of the public through awareness raising, strengthening the apprenticeship and skills training systems, expansion of the knowledge base by conducting studies and surveys and

support of district and community-level structures for the monitoring of child labor, (ILO/IPEC 2007).

Between 2003 and 2006, Ghana participated in the West African Cocoa and Commercial Agriculture Program (WACAP) to Combat Hazardous and Exploitative Child Labor. WACAP was initiated with the aim of preventing and eliminating hazardous child labor in the cocoa and other agricultural sub-sectors. In 2006, the Ministry of Manpower, Youth and Employment (MMYE), released its five-year National Program for the Elimination of the Worst Forms of Child Labor in the Cocoa Sector (NPECLC), which is a component of the present Time-Bound Program. The overall goal was to eliminate the worst forms of child labor in cocoa production by 2011 and in all other sectors by 2015. In 2008, the MMYE also drafted a National Plan of Action for the Elimination of the worst forms of Child Labor 2008-2015. The overall goal was to reduce the incidence of the worst forms of child labor to the barest minimum by 2015, while laying strong social, policy and institutional foundations for the elimination and prevention of all other forms of child labor in the longer term, (Zdunnek et. al., 2008, pp. 7-12).

The Government of Ghana attaches prime importance to the formation of the nation's human capital from childhood to adulthood. It has the belief that increased school enrollment could be a relevant factor for the reduction of child labor. Based on the requirements of the nation's constitution and observed challenges faced by children in gaining access to formal education, the Government of Ghana institutionalized a program of Free Compulsory Universal Basic Education (FCUBE), this was to ensure that all children have access to high quality basic education. To ensure that all children including those from poor households were enrolled, the Capitation Grant (an amount of money given to each child) was also introduced in 2005 supported by a national school feeding program.

All these legislations and policies have been implemented by the Government of Ghana with support from various organizations, but the problem of child labor and its worst forms still exist in Ghana. In Ghana now, available evidence suggests that children are increasingly being trafficked on a large scale and becoming involved in such activities as commercial sexual exploitation, customary or ritual servitude (trokosi)<sup>4</sup>, head carriage of heavy loads (kaya), truck pushing, small scale mining (galamsey) and stone quarrying, fishing, and cash crop agriculture. Significant numbers are also found in the begging business, transportation, traditional restaurants (“chop bars”), and most often petty trading. These worst forms of child labor entail violations of children’s rights that demand instant action for their prohibition. It is therefore obvious that the level of interventions being provided doesn’t match the level of the problem or these policies do not aim at most important determinants of child labor.

### **3.5 Summary**

This chapter has reviewed child labor in Ghana, some of the salient issues of interest are as follows; Child labor has been in Ghana since the colonial period, but the first ever Child Labor Survey was conducted in 2001. Other nationwide surveys prior to 2001 and after that gave some insights on the incidence of child labor overtime. Statistics from these surveys showed that the percentage of working children was between 24-40 percent over the years. There was always a gender gap in the percentage of working children in Ghana, with the percentage of boys always outweighing that of girls. Child labor has been prevalent in all ten regions of Ghana, but the incidence has been much higher in the northern part of Ghana than the southern part.

---

<sup>4</sup> The word trokosi can be translated as “slave to the gods” or alternatively as “wife to the gods”.

In terms of occupation, agriculture/ fishing/forestry has been the major employer of children in Ghana; this is followed by the service and sales work and then by other general workers such as truck-pushers, porters, laborers and driver-mates.

A trend analysis of school attendance in Ghana has shown an increasing trend, this notwithstanding; some children in the school going age are not in school but working, others combine school with work. Majority of the working children usually worked during the daytime between 6 a.m. and 6 p.m.

The worst forms of child labor as defined by Article 3 of the ILO Convention (1999a) No. 182 are still in existence in Ghana even though the Government of Ghana has enacted a lot of legislations and implemented many policies to eradicate child labor in Ghana. Some of these legislations are the Ghana Children's Act (Act 560) in 1998, the 1998 Criminal Offences Amendment Act (Act 554), the 2003 Juvenile Justice Act (Act 653) and the Human Trafficking Act (Act 694) in 2005. Also some policies like; the ILO International Program on the Elimination of Child Labor (IPEC), National Program for the Elimination of the Worst Forms of Child Labor in the Cocoa Sector (NPECLC), National Plan of Action for the Elimination of the worst forms of Child Labor 2008-2015 and the Free Compulsory Universal Basic Education (FCUBE) to increase school enrollment have all been implemented.



## **CHAPTER FOUR: DATA AND DESCRIPTIVE STATISTICS**

### **4.0 Introduction**

This chapter presents a description of the data used by the study and a descriptive statistics of the dependent and independent variables used in the estimation of the factors that determine the probability to work in chapter five and the factors that jointly determine working and schooling decisions in chapter 6. These statistics are presented in both tables and figures where necessary for clearer illustrations.

### **4.1 Data Source**

For this study, we use the dataset of the Ghana Living Standards Survey round six (GLSS6), conducted in 2012/2013. The Ghana Living Standards Survey is a nation-wide household survey which provides information in assessing the living condition of the Ghanaian households. It collects information on the demographic characteristics of the population, their education, health, employment and time use, migration, housing conditions and household agriculture, among others. The GLSS6 dataset focuses on the Labor Force Survey (LFS) module with additional sections on Child Labor and Household Financial Services. A total of 18,000 households in 1,200 Enumeration Areas (EAs), consisting of 655 rural EAs (54.6 percent) and 545 urban EAs (45.4 percent) were selected for the survey. A total of 72,372 persons were interviewed, but the concern of this study is the persons aged 5-14 years and this comprised 19,522, making 26.9 percent of the total number of people interviewed. The questionnaire used by the survey is

presented in the appendix<sup>5</sup>. In addition to the round six of the GLSS data set, the study makes use of the other rounds of the GLSS to generate past statistics of children involved in economic activity and their characteristics.

## 4.2 Dependent Variables

Table 4.1 presents the summary of the dependent variables used in the estimation of the factors that determine the probability to work and the factors that jointly determine working and schooling decisions. A total number of 19,522 children were used in the estimations. The table shows that more boys work than girls, thus, 26.55 percent for boys and 24.14 percent for girls, but there is no much gender difference for school attendance.

Table 4.2 also presents a summary of the dependent variable used in the estimation of the child labor supply curve. It reports the hours of work supplied by all working children and by boys and girls in a week. Table 4.2 shows that on average there is only a slight difference between the hours supplied by boys and girls. At the minimum both boys and girls supply one (1) hour to work, but for the maximum, boys supply 120 hours while girls supply 105 hours per week.

---

<sup>5</sup> Only questions necessary for my study are presented.

**Table 4.1: Descriptive Statistics of Dependent Variables in Chapter Five**

<b>Variables</b>	<b>All</b>		<b>Boys</b>		<b>Girls</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
<b>Works</b>						
<b>Yes</b>	4,953	25.37	2,648	26.55	2,305	24.14
<b>No</b>	14,569	74.63	7,327	73.45	7,242	75.86
<b>Total</b>	19,522	100	9,975	100	9,547	100
<b>School</b>						
<b>Yes</b>	17,364	88.95	8,884	89.06	8,480	88.82
<b>No</b>	2,158	11.05	1,091	10.94	1,067	11.18
<b>Total</b>	19,522	100	9,975	100	9,547	100

*Source:* Constructed by Author from GLSS 6 (2012/13)

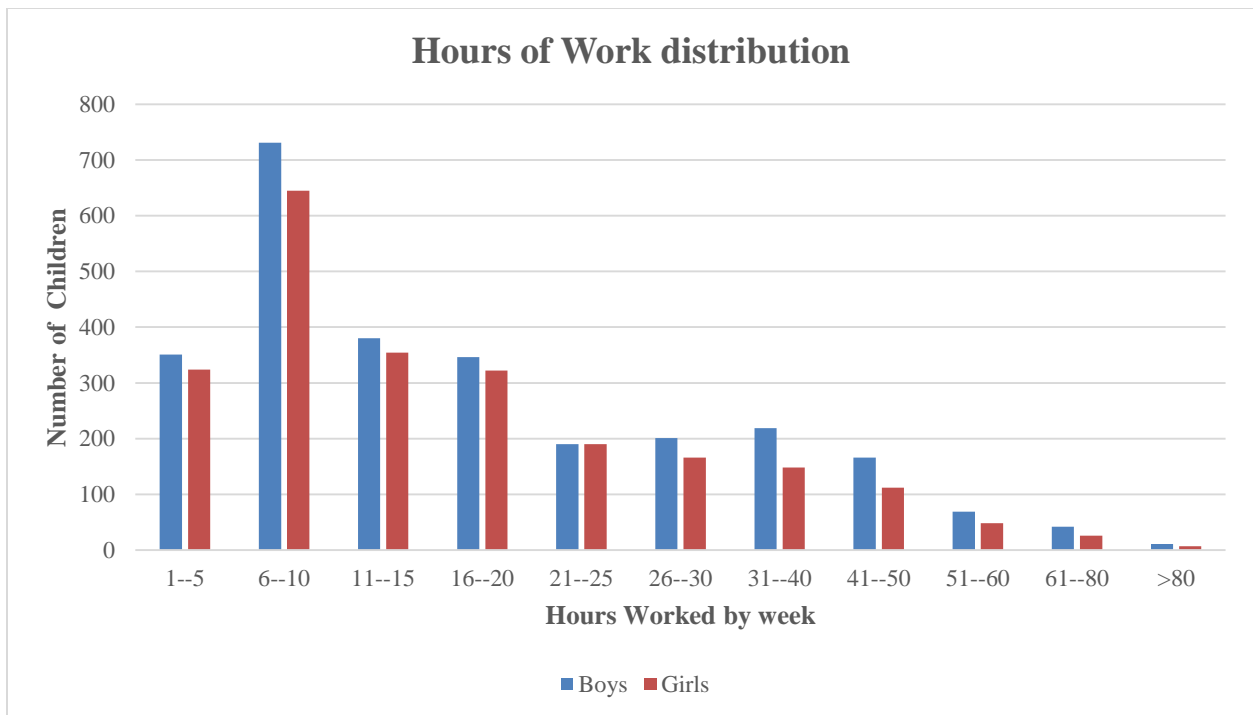
**Table 4.2: Hours of Work Supplied in a Week by Working Children**

<b>Variable</b>	<b>Boys</b>	<b>Girls</b>	<b>All</b>
<b>Number of Observation</b>	2,648	2,305	4,953
<b>Mean</b>	18.910	17.67	18.334
<b>Standard Deviation</b>	15.417	14.32	14.929
<b>Minimum</b>	1	1	1
<b>Maximum</b>	120	105	120

*Source:* Constructed by Author from GLSS 6(20012/13)

Figure 4.1 shows the distribution of the hours supplied by boys and girls. The figure is positively skewed, this means the distribution mass is on the lower side and that the mean of the distribution exceeds the median.

**Figure 4.1: Distribution of Hours of Work by Boys and Girls**



Source: Author from GLSS 6 (2012/13)

### 4.3 Independent Variables

Table 4.3 and 4.4 present the descriptive statistics of the independent variables. Table 4.3 shows that the average wage for the 13 children (see Table 4.4) who received payment is approximately 1 Ghana Cedi, 20 Pesewas per hour, with a minimum of approximately 3 Pesewas and a maximum of 8 Ghana Cedis, 40 Pesewas per hour.

The mean age of the children used in the estimation is approximately 9 years with the youngest child being 5 years old and the oldest child being 14 years. This selection is informed by our definition of child labor in the literature review in chapter two above. With respect to the expenditure on school, the average amount spent by households on school is approximately 147 Ghana Cedis per year, with a maximum of 11,990 Ghana Cedis per year. It should be noted that only one person spends this huge amount on schooling per year. It is interesting to know that the majority of the households actually spend nothing on schooling. The average hours spent by children to move from their home to school and back home is 0.4 hours (24 minutes). There are in fact very few children who spend between 20 to 50 hours to go and come back from school; these children could be boarders whose schools are outside their region of residence and undertake this journey three (3) times in the academic year.

**Table 4.3: Descriptive Statistics of Independent Continuous and Discrete Variables**

<b>Variable</b>	<b>Wage (per hour)</b>	<b>Age (In Years)</b>	<b>Expenditure on School (per Year)</b>	<b>Distance to and from School (Hours)</b>	<b>Hours Spent in Class (per week)</b>
<b>Mean</b>	1.1988	9.405	147.054	0.428	26.782
<b>Standard Deviation</b>	1.4843	2.847	339.055	1.529	14.094
<b>Minimum</b>	0.0259	5	0	0	0
<b>Maximum</b>	8.4	14	11,990	50	84

*Source:* Constructed by Author from GLSS 6 (2012/13)

In Table 4.4, statistics about the employment type shows that majority of the children (99.74 percent) do not receive any payment for their work and only 0.26 percent of the working children receive some payment. Two important variables worth discussing are the intergenerational and the poverty variables. Table 4.4 shows that 30.76 percent of the fathers and 34.83 percent of the mothers were child laborers; also 22.74 percent of the children had both parents being child laborers.

With respect to the poverty status of the household, the table shows that 18.01 percent are very poor, 21.55 percent are poor (see Chapter one for poverty line definition). It's interesting to find out that a majority of 60.44 percent of the total household are not poor. This could explain why majority of the children are in school and only a few are engaged in work.

**Table 4.4: Descriptive Statistics of Independent Categorical Variables**

	<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative</b>
<b>Child Characteristics</b>				
<b>Sex</b>				
	<b>Female</b>	9,547	48.90	48.90
	<b>Male</b>	9,975	51.10	100
	<b>Total</b>	19,522	100	
<b>Employment Type</b>				
	<b>Paid Employee</b>	13	0.26	0.26
	<b>Non Agric Workers</b>	22	0.44	0.7

<b>Agric Workers</b>	102	2.07	2.77
<b>Unpaid Family Workers</b>	4,767	96.24	99.01
<b>Domestic and Casual Workers</b>	26	0.53	99.54
<b>Apprentice</b>	23	0.46	100
<b>Total</b>	4,953	100	

### **Parent Characteristics**

#### **Dad was a Child Laborer**

<b>Yes</b>	6,005	30.76	30.76
<b>No</b>	13,517	69.24	100
<b>Total</b>	19,522	100	

#### **Mum was a Child Laborer**

<b>Yes</b>	6,800	34.83	34.83
<b>No</b>	12,722	65.17	100
<b>Total</b>	19,522	100	

#### **Both Parents were Child Laborers**

<b>Yes</b>	4,439	22.74	22.74
<b>No</b>	15,083	77.26	100
<b>Total</b>	19,522	100	

#### **Dad in House**

<b>Yes</b>	12,963	66.40	66.40
------------	--------	-------	-------

<b>No</b>	6,559	33.60	100
<b>Total</b>	19,522	100	

**Mum in House**

<b>Yes</b>	15,618	80.00	80.00
<b>No</b>	3,904	20.00	100
<b>Total</b>	19,522	100	

**Father Educational Level**

<b>No Education</b>	5,846	29.95	29.95
<b>Basic</b>	3,870	19.83	49.78
<b>Secondary</b>	6,085	31.16	80.94
<b>Tertiary</b>	3,721	19.06	100
<b>Total</b>	19,522	100	

**Mother Educational level**

<b>No Education</b>	6,474	33.26	33.26
<b>Basic</b>	4,331	22.18	55.44
<b>Secondary</b>	4,830	24.74	80.18
<b>Tertiary</b>	3,887	19.91	100
<b>Total</b>	19,522	100	

**Household Characteristics**

**Religious Background**

<b>No Religion</b>	629	3.23	3.23
<b>Christians</b>	13,666	70.00	73.23
<b>Muslims</b>	5,215	26.71	99.94



<b>Traditionalist</b>	12	0.06	100
<b>Total</b>	19,522	100	

#### Poverty Status

<b>Very Poor</b>	3,516	18.01	18.01
<b>Poor</b>	4,207	21.55	39.55
<b>Non Poor</b>	11,799	60.44	100
<b>Total</b>	19,522	100	

#### Community Characteristics

##### Location

<b>Urban</b>	6,715	34.40	34.40
<b>Rural</b>	12,807	65.60	100
<b>Total</b>	19,522	100	

##### Ecological Zone

<b>Coastal</b>	2,161	11.07	11.07
<b>Forest</b>	7,370	37.75	48.82
<b>Savannah</b>	8,762	44.88	93.70
<b>Accra</b>	1,229	6.30	100
<b>Total</b>	19,522	100	

##### School Ownership

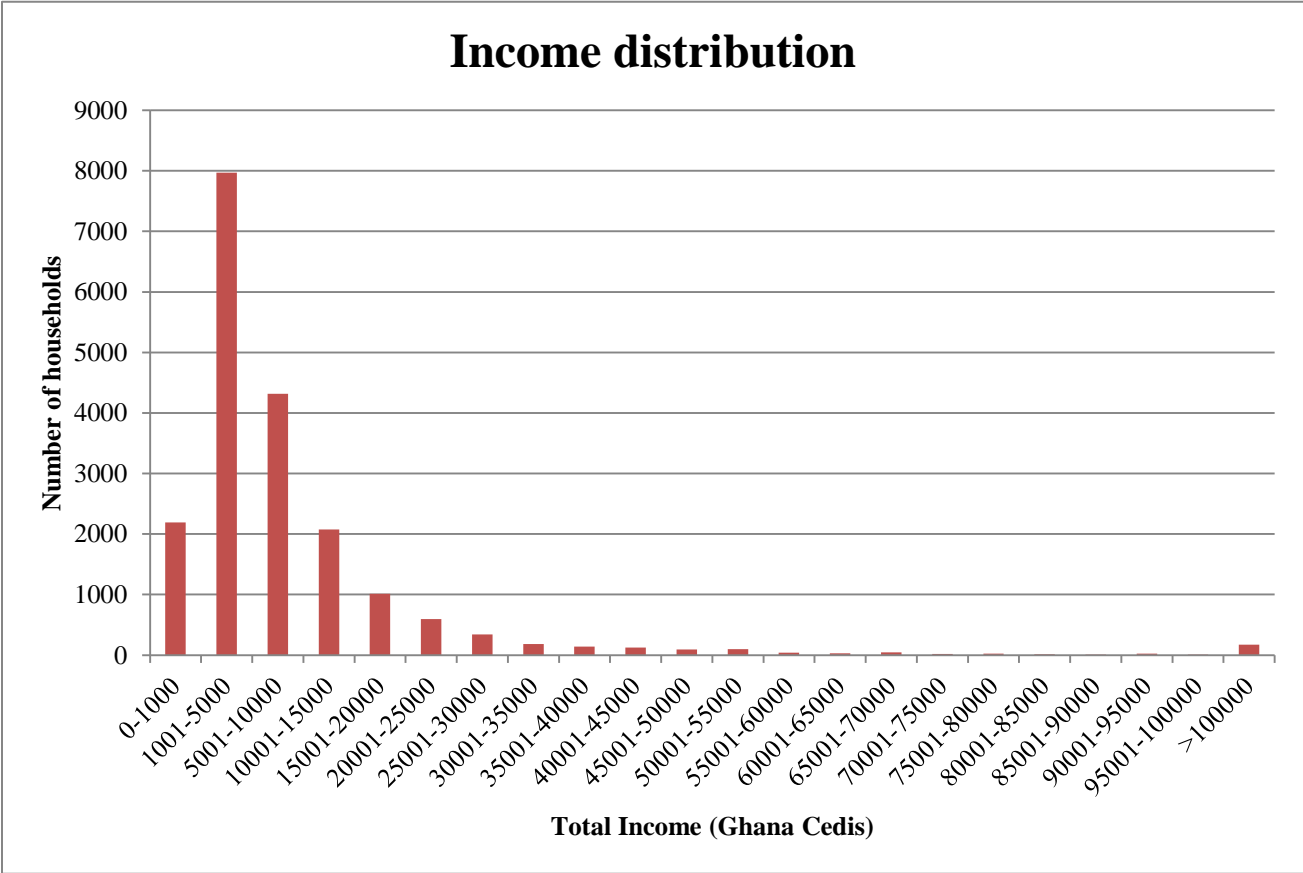
<b>Public</b>	11,306	65.11	65.11
<b>Private</b>	6,058	34.89	100
<b>Total</b>	17,364	100	

---

*Source:* Constructed by Author from GLSS 6 (2012/13)

Figure 4.2 shows the income distribution of the households. From the diagram it is obvious that majority of the households earn between 1,001 and 5,000 Ghana Cedis per year, and this represents 22.1 percent of the households. Only about 0.9 percent of the households earn above 100,000 Ghana Cedis per year. The income distribution shows the characteristic positive skewed shape, i.e., the median is smaller than the mean. The diagram shows that income inequality is very high in Ghana; this confirms the estimated Gini coefficient of 0.66 in 2013.

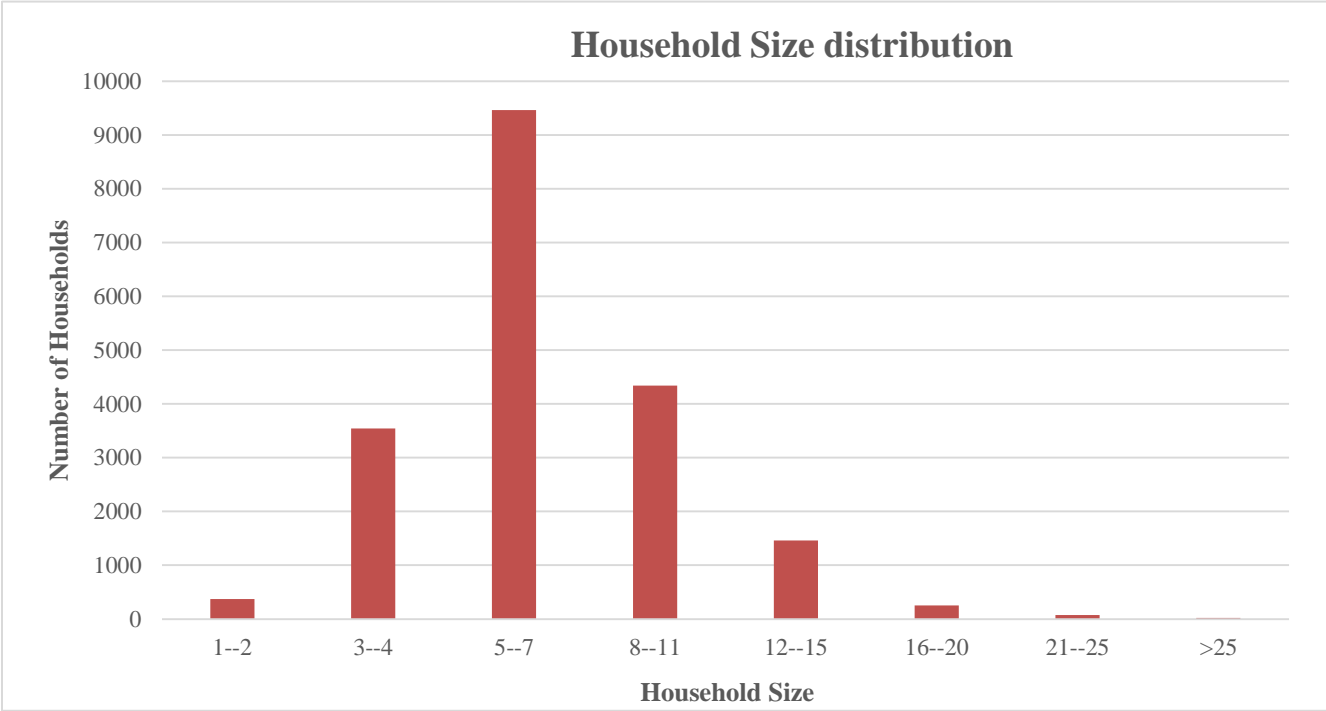
**Figure 4.2: Distribution of Yearly Gross Household Income**



Source: Author from GLSS 6 (2012/13)

Figure 4.3 shows the distribution of the number of people living in a household. From the diagram we can see that majority of the households have between 5 and 7 people living together. The figure shows that the distribution of the number of household members is symmetrical around 5-7 persons.

**Figure 4.3: Distribution of household Size**



*Source:* Author from GLSS 6 (2012/13)

Before doing the estimations, we suspected some correlation between the parents’ educational levels, the household size, the poverty levels, the public school variables and the location. This suspicion is based on the fact that all these variables may be correlated with household income; hence we run a correlation test for all independent variables. The result of the

correlation test is presented in Tables A5.2a to A5.2d in the appendix. The test shows that there exists significant correlation between all these variables. These significant correlations may lead to multicollinearity in the estimations and may also lead to difficulty in disentangling the effects of these explanatory variables; hence we run an individual and joint test for the significance of these variables. The result of the test shows that these variables are individually and jointly significant; hence the above mentioned consequences may not be as problematic as we suspected.

## **CHAPTER FIVE: SOCIO-ECONOMIC FACTORS OF CHILD LABOR**

### **5.0 Introduction**

Chapter five presents the socio-economic factors of child labor. In this chapter we analyze the factors that induce parents to cause their children to work by testing the poverty hypothesis and the intergenerational transmission of child labor. We also analyze the factors that jointly determine the probability of child work and schooling decisions by using a bivariate probit estimation. The bivariate estimation also helps us to test the existence of a trade-off between child work and school; it further brings out the factors that determine the probability of combining work and school. This chapter starts with a description and measurement of the variables used in the estimations. This is followed by the univariate logit analysis and the bivariate probit analysis. In this chapter we attempt to give explanations for the empirical findings from the estimations.

### **5.1 Empirical Model and Measurement of Variables.**

In this section the variables and the empirical model used in this chapter are discussed. The section starts with a description of the dependent variables for the various estimations and then the description of the independent variables follows; it also discusses the measurement of these variables.

In order to test for the poverty hypothesis and the intergenerational transmission of child labor in conjunction with estimating the factors that induce parents to cause their children to work, we estimate a univariate logit as follows:

$$P(Y = 1) = \alpha + \beta_1 childX'tics + \beta_2 ParentX'tics + \beta_3 HHX'tics + \beta_4 ComX'tics + \varepsilon \quad (5.1)$$

The dependent variable in Equation (5.1) is the probability for  $Y=1$  and  $Y$  has the value of one (1) if the child works and zero if otherwise. In the GLSS6 questionnaire the child was asked to tell whether or not he or she was engaged in any work during the last seven days. The explanatory variables are as follows: *ChildX'tics* is a vector of child characteristics; this includes gender and age of the child. *ParentX'tics* is a vector of parent characteristics such as parent's educational level and parents being child laborers. *HHX'tics* is a vector of household characteristics such as household size, poverty level and religious background. *ComX'tics* is a vector of community characteristics such as location (urban or rural) and  $\varepsilon$  is the error term.

The equations for the bivariate probit used to estimate the joint probability of child work and schooling decision are also as follows:

$$P(Y_1 = 1) = \beta_1 childX'tics + \beta_2 ParentX'tics + \beta_3 HHX'tics + \beta_4 ComX'tics + \varepsilon \quad (5.2)$$

and

$$P(Y_2 = 1) = \delta_1 childX'tics + \delta_2 ParentX'tics + \delta_3 HHX'tics + \delta_4 ComX'tics + \mu \quad (5.3)$$

There are two dependent variables in Equations (5.2) and (5.3) above with both being binary. The dependent variable in Equation (5.2) is the same as in Equation (5.1). The dependent variable in Equation (5.3) is the probability for  $Y_2=1$  and  $Y_2$  has a value of one (1) if the child is in school and zero if otherwise. In the GLSS6 questionnaire the child was asked to tell whether or not he or she attended school during the last 12 months. Equations (5.1) and (5.2) look the same but there is a difference in the estimations. In Equation (5.1), the decision to work is a

single decision and is independent of schooling; hence we use univariate estimation, while in Equation (5.2) the decision is a joint one, based on the assumption that children working and schooling decisions are interdependent. We do not believe that these two decisions are independent and also follow a sequential process hence the use of a bivariate probit model. This model will allow for the existence of possible correlation between the disturbances of the two decisions

The description and measurement of the independent variables and their expected impacts are discussed below.

### ***Child Characteristics***

The variables that represent the child characteristics are:

*Age*, this describes how old the child is and it is measured in years. Age squared is also included in the estimation in order to model that the influence of age increases at decreasing rates. A concave relationship is therefore expected for the probability to work in both single and joint decision with schooling, thus age is expected to have a positive effect on the probability to work while its square (*age2*) is expected to have negative effect on the probability work in both single and joint decisions, also a concave relationship is expected for the probability to attend school, thus age is expected to have a positive effect on the probability to attend school while its square (*age2*) is expected to have negative effect on the probability to attend school.

*Sex*, this describes the gender of the child, and is measured as a binary variable. It is valued as one (1) for males and zero (0) for females. A gender gap is expected for both work and school in both the singular and joint decision, this expectation is informed by the statistics presented in

chapter three which showed that the number of boys working and schooling has always outweighed that of girls.

### *Parent Characteristics*

Since the decision to work and to go to school by a child is usually in the hands of the parents or the household head, we believe there are certain specific characteristics of the parents that will impact such decisions. Such characteristics include the existence of the father and or the mother in the house. These are two binary variables; Dadinhouse and Muminhouse, with the value of one (1) for Dadinhouse if the father lives in the household and one (1) for Muminhouse if the mother lives in the household. These variables have the value of zero (0) if father and mother do not live in the house. In the GLSS6 questionnaire the child was asked to tell whether the father and/or the mother live together with him or her in the same household. We expect that there will be a negative relationship between these variables and the decision to work in both single and joint decisions but a positive relationship between these variables and the decision to attend school in the joint decision. This is because a household that has the father and or the mother in the house is less likely to cause the child to work but more likely to send the child to school. This expectation is based on the intuitive reasoning that, all things being equal, hardly will a parent who thinks about the well being of his or her child cause him or her to work at the detriment of schooling.

Parents' education is generally expected to have a positive effect on the probability of a child to attend school in the joint decision but a negative effect on the probability to work in both the single and the joint decisions. This expectation is informed by the overlapping generation model built by Emerson and Souza (2003, pp. 3-10) which posits that parents with higher education are less likely to send their children to work but are more likely to send them to school. For the purpose of



this study, the parent educational variable has been categorized into four levels i.e. no education, basic or primary education, secondary education and tertiary or higher education. The categorization is justified to establish the impact of varying parental educational levels on the probability of a child to work and attend school.

One objective of this study is to explore the inter-generational transmission of child labor. The impact of the parents having been child laborers themselves on the probability of causing their child to work is studied by including three dummies, one for each parent, (father was a child laborer and mother was a child laborer) and one for both parents being child laborers.

The intergenerational variables were generated from the main data using the age when the parents started working. If a parent started working at the age of 14 and below, then it is assumed that he or she was a child laborer. The Overlapping Generations Model built by Emerson and Souza (2003, pp. 3-10), postulates that parents who were child laborers themselves are more likely to cause their children to work, but we cannot determine this effect a priori since it can be positive or negative. A parent who has been raised in a poor family where he/she had to work as a child himself/herself which constrained his/her ability to invest in schooling and condemned him/her to poverty as an adult, may tend to send his/her children to work in turn. On the other hand, it may be that if the parents were child laborers themselves and had to feel the effect of child labor or felt disadvantaged as a result of working at an early age, they may be less likely to send their children to work.

### ***Household Characteristics***

The kind of household in which a child finds him/herself has a great influence on his or her activities. Some of the household characteristics included in our estimations are the following;

*Household poverty status*; poverty has been argued by many researchers to be the main cause of child labor, but others also disagree. This is one of the main objectives of this chapter; to test the poverty hypothesis. It is therefore necessary to include poverty into the estimation to test its importance for explaining child labor. In the GLSS6 survey the poverty status of the household is measured by using the absolute and extreme poverty line indicator. The methodology used by the Ghana Statistical Service produced an extreme poverty line of 792.05 Ghana Cedis and an absolute poverty line of 1,314.00 Ghana Cedis per equivalent adult per year in the January 2013 prices of Greater Accra Region. In U.S. dollar terms, the absolute poverty line is equivalent to about \$1.83 per day and \$1.10 per day for the extreme poverty line. The absolute poverty line indicates the minimum living standard in Ghana while the extreme poverty line indicates that even if a household spends their entire budget on food, they still would not meet the minimum calorie requirement. The poverty variables will be used in the estimations to test for the poverty hypothesis. It is expected that poverty would have a positive impact on the probability to work. For the purpose of this study, the poverty status variable has been categorized into very poor, poor and non-poor. The categorization is justified to establish the impact of different levels of poverty on the probability of child work.

Household size is also an important variable in the decision of a household to allow its children to work or go to school. This is measured as the number of people who live in the household together and eat from the same pot of food. It is expected that the household size would have a positive impact on the probability to work but a negative impact on the probability to attend school. This is because as the household size increases there will be more pressure on the income of the household and as such children will be compelled to work to support the household.

We will also check whether the religious background of the household influences the households in their decisions to induce their children to work or to go to school. This is because some religious doctrines and beliefs teach their members the importance of encouraging children to work or go to school. Most schools in Ghana are also owned by religious organizations and this may influence the expenditure on schooling. The impact of religious background cannot be determined a-priori. For the purpose of this study religious background has been categorized into; no religion, Christians, Muslims and Traditional and other beliefs.

The amount of expenditure spent by the household on the child for school is an important variable for both school and work decisions by the household. It is measured as the summation of all expenditure on school fees, Parents and Teachers Association (PTA) dues, expenditure on uniform, expenditure on books, fare to and from school, expenditure on extra classes and expenditure on food as mentioned in the GLSS6. We expect that this impacts negatively on the schooling decision but positively on the work decision. Intuitively, higher expenditure may discourage parents from sending their children to school and may be a reason for children to work.

### ***Community Characteristics***

We include some community characteristics such as the geographical location of the community (urban or rural), and ecological zone of the community. The location is categorized into rural and urban areas, and the ecological zone is also categorized into Accra, Coastal areas, Savannah areas and Forest areas. We check whether the location of the community has some influence on the activities of the children living in it.

Previous study done by Canagarajah and Coulombe (1997, pp. 13-26), has shown that distance to school has an influence on the decision of a child to attend school; we therefore include this variable in the bivariate model. School distance is measured as the number of hours a child has to spend to go to school and back. We expect that it would have a negative impact on the probability to attend school and a positive impact on the probability to work. This expectation is based on the intuition that longer distance to school may discourage children from going to school.

Finally, we include the ownership of school (publicly or privately owned) in the bivariate model. We expect that children who attend privately owned school will be less probable to work than those who attend publicly owned school; this is because they spend more time in school, and are usually attended by children from rich families.

Table A5.1 in the appendix presents a summary of all the variables used in the estimations.

## **5.2 Why do Parents Cause their Children to Work? Test for the Poverty Hypothesis and the Intergenerational Phenomenon of Child Labor.**

In this subsection we present the estimation results and discussions of the findings of the univariate logit model. The first and general result (pooled sample) in Table 5.1 is the logit estimation for all children used in the estimations. Further we present other estimations in Table 5.2 and 5.3 for boys only, girls only, for those living in the urban areas only and for those living in the rural areas only. These other results are presented to allow the marginal effects of all variables to differ between boys and girls and between urban and rural dwellers. For the pooled sample we present the values of the coefficient, the marginal effects and the P-values, while for

the separated samples we present only the marginal effects and the P-values. All estimations are carried out using the Stata 11 software package.

The coefficients of the explanatory variables are interpreted as the effect of each exogenous variable on the likelihood of a child working. This is different from the marginal effect which reflects the probability value of a child working conditioned on the explanatory variables. In this section, we analyze the empirical results of the probability of a child working based on the results of the marginal effect estimated from the results of the odds ratio from the logit estimations. The performance of all estimations in terms of their predictive power is measured by the statistical significance of the Wald test.

### *5.2.1 Results for the Pooled Sample*

This subsection discusses the impact of the independent variables on the probability to work by both boys and girls in both rural and urban areas.

**Table 5.1: Univariate Logit Estimation for the Probability of Child Work. Pooled Sample for all Children 5-14**

<b>Independent Variables</b>	<b>Coefficients</b>	<b>Marginal Effects</b>	<b>P&gt;  Z  </b>
<b>Individual Characteristics</b>			
<b>Sex</b>	0.0853	0.0126	0.022**
<b>Age</b>	0.7157	0.1059	0.000***

<b>Age2</b>	-0.0228	-0.0034	0.000***
<b>Inschool</b>	-0.7055	-0.1045	0.000***
<b>Parents Characteristics</b>			
<b>Dadchildlaborer</b>	0.8169	0.1209	0.000***
<b>Mumchildlaborer</b>	1.0599	0.1569	0.000***
<b>Bothchildlaborers</b>	-0.1123	-0.0166	0.219
<b>Dadinhouse</b>	-0.4256	-0.0630	0.000***
<b>Dadbasicedu</b>	0.1869	0.0277	0.123
<b>DadSecedu</b>	-0.1435	-0.0213	0.051*
<b>Dadhigheredu</b>	-0.6435	-0.0953	0.001***
<b>Muminhouse</b>	-0.6925	-0.1025	0.000***
<b>Mumbasicedu</b>	-0.2446	-0.0362	0.049**
<b>MumSecedu</b>	-0.1668	-0.0247	0.097*
<b>Mumhigheredu</b>	-0.8288	-0.1227	0.097*
<b>Household Characteristics</b>			
<b>Householdsize</b>	0.0160	0.0024	0.006***

<b>Verypoor</b>	0.2124	0.0315	0.000***
<b>Poor</b>	0.1677	0.0248	0.000***
<b>Noreligion</b>	0.0178	0.0026	0.860
<b>Muslims</b>	-0.2104	-0.0311	0.000***

**Community Characteristics**

<b>Location</b>	-0.6728	-0.0996	0.000***
<b>Publicsch</b>	0.5514	0.0817	0.000***
<b>Coastal</b>	0.0039	0.0006	0.980
<b>Forest</b>	1.0249	0.1518	0.000***
<b>Savannah</b>	1.9515	0.1409	0.000***

---

Number of observation: 19522

Log likelihood = -8846.0099

Prob > Chi2 =0.0000

NB: \*\*\* significant at 1%    \*\* significant at 5%    \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

The result from the estimation shows that there is a gender gap in the probability to work, thus, boys are 1.2 percent more probable to work than girls. Even though this gap is small, the results show that it is significant at 5 percent level of significance and hence worth of consideration. This finding contradicts that of other researchers like Nielsen (1998, pp. 15-22) and Canagarajah and Coulombe (1997, pp. 13-26) who both found no gender difference in Zambia and Ghana respectively. The disparity between our result and that of previous studies in Ghana could be attributed to the new data set which had its focus on child labor and hence is more reliable. Our findings also deviate from that of Sasaki and Temesgen (1999) who found a gender gap but in favor of girls in Peru.

Age has been shown by the result to have a non-linear effect on the probability to work by a child. The positive coefficient of the age variable shows that older children are 10.59 percent more probable to work than younger children. However, the negative coefficient estimate of the squared age variable suggests that the positive effect of age on the probability to work weakens in the later age categories, thus the probability to work increases at a decreasing rate as a child's age increases.

A child who attends school is 10.45 percent less likely to work than his or her counterpart who does not attend school; this is significant at 1 percent level of significance. This result is consistent with all previous studies reviewed which have shown that there is a trade-off between schooling and working (see e.g. Canagarajah & Coulombe 1997, p. 15).

With regards to the impact of parents' characteristics on the probability of a child to work, the result from the estimation shows that child labor is an intergenerational phenomenon and as such provides an evidence to support the overlapping generation model built by Emerson and Souza (2003, pp. 3-10) which postulated that parents who were child laborers are more



likely to cause their children to work. The results reveal that children whose fathers were child laborers are 12.09 percent more likely to work than their counterparts whose fathers were not child laborers, also children whose mothers were child laborers are 15.69 percent more likely to work than their counterparts whose mothers were not child laborers. Our findings confirm that of Wahba (2000, p. 15) and Emerson and Souza (2003, pp. 3-10) who did a similar study in Egypt and Brazil respectively. They both found that parents who were child laborers themselves are more likely to cause their children to work.

We can also observe that the presence of the father and/or the mother in the house has a negative impact on the probability of a child to work; thus, children who live together with their fathers and/or their mothers are less probable to work. This confirms our expectation that hardly will a parent who thinks about the well being of his or her child cause him or her to work at the detriment of schooling.

With respect to the educational levels of the parents, it has been shown by the results that parents' education is a very important determinant of the probability that a child works and as such parents with high level of education are less likely to cause their children to work. Our result shows that children whose fathers have a tertiary education are 9.5 percent less likely to work than those whose fathers have no education (reference group); also children whose mothers have a tertiary education are 12.27 percent less likely to work than those whose mothers have no education. An intuitive reason for this result is that the educated parents understand the essence of education and the negative effects of child labor better. Also, the educated parents are more likely to have better jobs and hence higher income. This makes them more able to send their children to school. Our result confirms that of Canagarajah and Coulombe (1997, pp. 13-26) who also showed that fathers with very high level of education in Ghana were less likely to send their

children to work. Our finding is also in line with that of Emerson and Souza (2003, pp. 3-10) who also showed that parents with higher education are less likely to cause their children to work in Brazil.

We can see from the results of the estimation that children from a bigger household size are 0.24 percent more probable to work than those from a smaller household. The findings imply that as the household size increases there is more pressure on the income of the household since more people in the household implies higher financial burden. This may compel children to work to support the household.

The very much argued poverty hypothesis has been proved by our estimation to be a reason for child labor in Ghana. It is obvious from the results that very poor households are 3.15 percent more likely to cause their children to work than the non-poor households (reference group); also, poor households are 2.48 percent more likely to cause their children to work than the non-poor households; these results are highly significant and contradict the findings of Canagarajah and Coulombe (1997, pp. 13-26) who found that poverty has no impact on child labor in Ghana. Our result provides better evidence to support the poverty hypothesis because our data had its focus on child labor and as such gives more reliable information. Furthermore, while Canagarajah and Coulombe (1997, pp. 13-26) used welfare index as a proxy for poverty, we used a poverty status measured by the absolute and extreme poverty line indicators.

The last group of factors to discuss is the community characteristics. The results show that there is a significant difference in the probability to work between children living in urban communities and those living in the rural areas. The results show that children living in urban communities are 9.96 percent less likely to work than other children living in the rural areas. This result is significant at the 1 percent level of significance.

The type of ownership of schools in the communities as expected has a significant impact on the probability that a child will work. The results show that children who attend publicly owned schools are 8.17 percent more likely to work than those who attend privately owned schools. This result is consistent with our expectation in the sense that most publicly owned schools spend fewer hours in school than the privately owned schools and as such children in publicly owned schools will have more time to work than their counterparts in the privately owned schools.

The ecological zone dummies which were included in the equation have shown to have significant impact on the probability that a child works. Those living in Accra were used as the reference group. The results show that children living in the Forest and Savannah areas are more likely to work than those living in Accra, but the result showed no significance difference between those in the Coastal areas and those in Accra. The statistical significance of the Wald test confirms the overall significance of the estimation.

### ***5.2.2 Differences in the Probability to Work between Boys and Girls***

In this section, we discuss the results of the univariate logit estimations for boys and girls separately based on the marginal effects estimated from the odds ratio of the estimations. This is to facilitate comparison of the probability to work by the two sexes conditioned on relevant characteristics. Table 5.2 reports the results of marginal effects of the probability to work derived from the univariate logit regression estimates for boys and girls separately.

The results show that the direction of the impact of age on the probability to work by boys and girls separately is not so different from that of the pooled sample. Thus, a non-linear

relationship is seen in both estimates, but the magnitude of this impact is a bit different. We can see that older girls are more probable to work than younger girls as compared to boys of that same age, viz. 12.15 percent for girls and 9.08 percent for boys. The negative coefficient for age squared also shows that as both boys and girls grow older, the probability to work increases but at a decreasing rate, even though the magnitude of the decrease is more for girls than boys, thus 0.42 percent for girls and 0.26 percent for boys. This result shows that the work-age curve is more concave for girls than for boys.

**Table 5.2: A Univariate Logit Estimate for the Probability of Child Work. Estimation for Separate Gender**

	<b>Boys Only</b>		<b>Girls Only</b>	
<b>Variables</b>	<b>Marginal Effect</b>	<b>P&gt; Z </b>	<b>Marginal Effect</b>	<b>P&gt; Z </b>
<b>Individual Characteristics</b>				
<b>Age</b>	0.0908	0.000***	0.1215	0.000***
<b>Age2</b>	-0.0026	0.000***	-0.0042	0.000***
<b>Inschool</b>	-0.13.47	0.000***	-0.0699	0.000***
<b>Parents Characteristics</b>				
<b>Dadchildlaborer</b>	0.1293	0.000***	0.1159	0.000***
<b>Mumchildlaborer</b>	0.1639	0.000***	0.1519	0.000***

<b>Dadinhouse</b>	-0.0537	0.000 <sup>***</sup>	-0.0739	0.000 <sup>***</sup>
<b>Dadbasicedu</b>	0.0257	0.328	0.0315	0.199
<b>DadSecedu</b>	-0.0361	0.025 <sup>**</sup>	-0.0082	0.580
<b>Dadhigheredu</b>	-0.1149	0.011 <sup>**</sup>	-0.0822	0.029 <sup>**</sup>
<b>Muminhouse</b>	-0.0979	0.000 <sup>***</sup>	-0.1059	0.000 <sup>***</sup>
<b>Mumbasicedu</b>	-0.0509	0.056 <sup>*</sup>	-0.0217	0.393
<b>MumSecedu</b>	-0.0084	0.700	-0.0383	0.059 <sup>*</sup>
<b>Mumhigheredu</b>	-0.1649	0.145	-0.0558	0.581

#### **Household Characteristics**

<b>Householdsize</b>	0.0014	0.245	0.0034	0.005 <sup>***</sup>
<b>Verypoor</b>	0.0469	0.000 <sup>***</sup>	0.0124	0.277
<b>Poor</b>	0.0399	0.000 <sup>***</sup>	0.0088	0.380
<b>Noreligion</b>	-0.0096	0.630	0.0215	0.346
<b>Muslims</b>	-0.0467	0.000 <sup>***</sup>	-0.0153	0.113

#### **Community Characteristics**

<b>Location</b>	-0.1042	0.000 <sup>***</sup>	-0.0957	0.000 <sup>***</sup>
-----------------	---------	----------------------	---------	----------------------

<b>Publicsch</b>	0.0827	0.000***	0.0801	0.000***
<b>Coastal</b>	0.0150	0.6790	-0.0129	0.673
<b>Forest</b>	0.1656	0.000***	0.1397	0.000***
<b>Savannah</b>	0.1591	0.000***	0.1246	0.000***

---

Prob > Chi2 =0.0000 (Boys only)

Prob > Chi2 =0.0000 (Girls only)

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

The impact of school attendance on the probability to work for boys and girls separately is similar to that of the pooled sample. There is a trade-off between working and schooling for both boys and girls but the magnitude of this impact is different for boys and for girls<sup>6</sup>. While a boy in school is 13.47 percent less likely to work than a boy who does not attend school, a girl in school is 6.99 percent less likely to work than a girl who does not attend school.

With regards to the impact of parents' characteristics on the probability to work by both boys and girls, we can see that the intergenerational transmission of child labor is confirmed by both estimates, thus both boys and girls whose fathers and mothers were child laborers are more likely to work than their counterparts whose fathers and mothers were not child laborers (see Table 5.2 for figures).

---

<sup>6</sup> NB. We did not conduct any test to check whether this is a significant difference since it's not the main objective of the study.

It is also obvious from the results that fathers' education is very important for the decision to cause both boys and girls to work. The results show that boys and girls whose fathers have tertiary education are less likely to work than boys and girls whose fathers do not have any education. Even though this result is significant for both boys and girls, the magnitude of the impact is bigger for boys than for girls, i.e. while boys whose fathers have tertiary education are 11.49 percent less likely to work than their counterparts whose fathers have no education, girls whose fathers have tertiary education are 8.22 percent less likely to work than their counterpart whose fathers have no education.

For the impact of household characteristics on the probability to work by boys and girls, we can see from Table 5.2 that the size of the household only affects the decision to cause girls to work. This implies that when the household becomes larger, girls are compelled to work to support the household. We also observe that the poverty hypothesis only holds for the boy child and not for the girl child. This result shows that poor households may cause their boys to work in order to supplement the household income either by working on their farms or helping in any family business or yet still engage in any other economic activities.

The impact of the community characteristics on the probability that a boy or a girl will work are not so different from that of the pooled sample. For instance, the result for the impact of location on the probability for boys and girls to work is similar to that of the pooled sample. The results show that both boys and girls living in the urban areas are less likely to work than those living in the rural areas. As usual the magnitudes of this impact vary for boys and for girls<sup>7</sup>. While boys living in the urban areas are 10.42 percent less likely to work than boys in the rural

---

<sup>7</sup> NB. Similarly no test conducted since it's not the main objective of the study.

areas, girls in the urban areas are 9.57 percent less likely to work than girls in the rural areas. These findings are both significant at the 1 percent level of significance.

It can be seen also from the results in Table 5.2 that both boys and girls in the publicly owned schools are more likely to work than boys and girls in the privately owned schools. The difference between the magnitudes of the impact for boys and that for the girls is very little, thus, 8.2 for boys and 8.01 for girls

The results from the estimate for the ecological zone dummies also show that both boys and girls living in the forest and the savannah areas are more likely to work than boys and girls living in Accra. However, the magnitudes of this impact are higher for boys than for girls<sup>8</sup>, while boys in the forest areas are 16.56 percent more likely to work than their counterparts in Accra, girls in the forest areas are 13.97 percent more likely to work than their counterparts in Accra. Also, while boys in the savannah areas are 15.91 percent more likely to work than their counterparts in Accra, girls in the savannah areas are 12.46 percent more likely to work than their counterparts in Accra. All the results for the impact of ecological zone dummies are significant at the 1 percent level of significance.

The statistical significance of the Wald test for both the boys and girls confirms the overall significance of the two estimations. It is also obvious that the result from the separate gender estimate confirms most of the findings from the pooled sample and this proves the robustness of the estimates although certain additional differences are observed.

### ***5.2.3 Differences in the Probability to Work between Urban and Rural Inhabitants***

---

<sup>8</sup> NB. Similarly no test conducted.



In this subsection, we discuss the results of the univariate logit estimations for children living in the urban and rural areas separately based on the marginal effects estimated from the odds ratio of the estimations. This further split of the sample is to find out whether there exist some locational differences in the probability to work by children conditioned on relevant characteristics. Table 5.3 reports the results of marginal effects of the probability to work derived from the univariate logit regression estimates for urban and rural inhabitants separately.

There appears to be some differences in the impact of gender on the probability to work by children in the different locations. The result shows that there is no difference between boys and girls in the urban areas but a significant difference between these two sexes in the rural areas. It can be seen from Table 5.3 that boys in the rural areas are 2.17 percent more likely to work than girls in the rural areas. This result may be explained by the type of work children are involved in in the rural areas, as some of the activities undertaken by children in the rural areas include farming, hunting, fishing etc., and these are mostly done by the boys. In the urban areas, the activities undertaken by children are mostly selling along the street, working as porters (Kayaye), etc., and these are done by both boys and girls.

The result for impact of age on the probability to work by children in the separate location is not so different from that of the pooled sample. The only difference is that age has a bigger influence on the children in the rural areas than those in the urban areas; thus, the work-age curve is more concave for children in the rural areas than for those in the urban areas.

The separate location estimations have also confirmed the trade-off between schooling and working, but the impact is higher for children in the urban areas than for those in the rural areas, thus while those in the urban areas who attend school are 76.40 percent less likely to work,

children in the rural areas who attend school are 11.40 percent less likely to work. These are all significant at 1 percent level of significance.

With regards to the impact of parents' characteristics on the probability to work by children living in urban and rural areas, it is obvious that the intergenerational transmission of child labor is confirmed by both estimates, thus children living in both urban and rural areas whose fathers and mothers were child laborers are more likely to work than their counterparts whose fathers and mothers were not child laborers. The difference between the two areas is that the intensity of the intergenerational impact of child labor is higher for rural dwellers than for the urban dwellers.

We can also see from the results that fathers' higher education has similar impact on those living in urban areas and those living in the rural areas. Thus, children whose fathers have tertiary education are less likely to work than their counterparts whose fathers have no education; this statement is true for both rural and urban dwellers. The reverse is true for the impact of mothers' education, thus, while mothers' education is a very important factor in the decision to allow children living in the rural areas to work, it is not so for those living in the urban area. The results show that children in rural areas whose mothers have higher education are 33.33 percent less likely to work than other children whose mothers have no education. We can therefore conclude that fathers' education is important for both rural and urban dwellers but mothers' education is a factor for only the rural dweller.

The impact of the household size is only significant in the urban areas. The results show that as the household size increases by 1 person, the probability to cause a child to work also increases by 0.83 percent, but this is only so for urban inhabitants. One reason for this difference

could be that cost of living is higher in the urban areas than in the rural areas. The poverty hypothesis has been found to hold more strongly for rural dwellers than for urban dwellers. Hence, we can say that the poverty hypothesis of child labor is mainly a rural phenomenon in Ghana.

Finally, we discuss the impact of community characteristics on the probability to work by children in the urban and the rural areas separately. Our estimation shows that the impact of school ownership on children in the urban and the rural areas separately is similar to the overall sample; thus children in publicly owned schools are more likely to work than those in the privately owned schools. However, the magnitude of this impact is bigger for those in the rural areas than for those in the urban areas. This result was expected due to the fact that most teachers in the rural public schools are engaged in other activities apart from teaching and as such are rarely found in school, these teachers are also reported of using some of their students to work on their farms. Children therefore take advantage of the absence of their teachers and use this time to work. Lastly on the community characteristics is the ecological zone dummies included in the estimation. The result is not so different from that of the pooled sample.

The statistical significance of the Wald test for both the urban and rural only estimates confirms the overall significance of the two estimates. Although certain differences are observed from the separate location estimations, it is obvious that the results confirm most of the findings from the pooled sample and this proves the robustness of the estimates.

**Table 5.3: Univariate Logit Estimation for the Probability of Child Work. Estimation for Separate Location**

Variables	Urban Only		Rural Only	
	Marginal Effect	P> Z	Marginal Effect	P> Z
<b>Individual Characteristics</b>				
Sex	-0.0060	0.423	0.0217	0.004***
Age	0.0633	0.000***	0.1262	0.000***
Age2	-0.0019	0.001***	-0.0040	0.000***
Inschool	-0.7640	0.000***	-0.1140	0.000***
<b>Parents Characteristics</b>				
Dadchildlaborer	0.0736	0.000***	0.1418	0.000***
Mumchildlaborer	0.1309	0.000***	0.1701	0.000***
Dadinhouse	-0.0242	0.063*	0.0811	0.000***
Dadbasicedu	0.0730	0.001***	0.0073	0.769
DadSecedu	0.0018	0.887	-0.0346	0.027**

<b>Dadhigheredu</b>	-0.0677	0.015**	-0.0879	0.069*
<b>Muminhouse</b>	-0.0579	0.000***	-0.1266	0.000***
<b>Mumbasicedu</b>	-0.0138	0.533	-0.0447	0.083*
<b>MumSecedu</b>	-0.0221	0.188	-0.0169	0.439
<b>Mumhigheredu</b>	-0.0227	0.659	-0.3333	0.081*

#### **Household Characteristics**

<b>Householdsize</b>	0.0083	0.000***	0.0003	0.823
<b>Verypoor</b>	-0.0164	0.443	0.0426	0.000***
<b>Poor</b>	0.0245	0.017**	0.0252	0.007***
<b>Noreligion</b>	-0.0214	0.466	0.0097	0.607
<b>Muslims</b>	-0.0279	0.006***	-0.0366	0.000***

#### **Community Characteristics**

<b>Publicsch</b>	0.0623	0.000***	0.0842	0.000***
<b>Coastal</b>	-0.0391	0.044**	-0.1445	0.000***
<b>Forest</b>	0.0951	0.000***	-0.0304	0.325
<b>Savannah</b>	0.0860	0.000***	--	--

Prob > Chi2 =0.0000 (Urban only)

Prob > Chi2 =0.0000 (Rural only)

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

### **5.3 Determinants of Joint Probability of Child Work and Schooling Decision; a Bivariate Probit Analysis**

In this section we present the results of the bivariate probit estimation and discuss the findings of the estimation. The first part of the section presents the results of the factors that jointly determine child work and schooling while the second part presents the factors that determine the probability of a child combining work and school. The bivariate probit estimation allows the computation of marginal effects necessary to arrive at the relative magnitudes of particular effects (Christofides et al. (1997, pp. 203-208)). For the purpose of this study, marginal effects of the joint probabilities are computed at the mean value of continuous explanatory variables, while for the dummy explanatory variables, marginal effects on the joint outcomes are computed by taking the difference in the joint probabilities evaluated at the two values of the dummy variable. The same vector of covariates is included in the two equations and hence the system is just identified. This approach is adopted by following the study done by Haile and Haile (2007, pp. 10-13) who did a similar study for Ethiopia.

### ***5.3.1 Factors that Jointly Determine Child Work and School***

In this subsection we present the interpretations of the results from the bivariate probit estimation. Table 5.4 shows the coefficients and the P-values from the estimation. Since the coefficients of the explanatory variables only tell us the direction of the effect of each exogenous variable on the likelihood of a child working and schooling and not the magnitude of the probability, we interpret the results as such and outline the factors that jointly determine the probability of working and schooling. We will in the next subsection present and interpret the probability of combining work and school from the results of the marginal effects.

As can be seen from Table 5.4, the coefficient of correlation between the errors in the two equations (equation for work and equation for school) is negative; this shows that there is a tradeoff between working and schooling. In order to confirm this tradeoff, we run two separate equations where school attendance is an explanatory variable in the working equation such as in Table 5.1 and another one where child work is an explanatory variable in the schooling equation in Table A5.3 in the appendix. Both equations show a negative relationship between working and schooling. Also, the likelihood-ratio test which is used to test whether the coefficient of correlation between the errors in the two equations is statistically different from zero has shown that the errors are significantly correlated. This justifies the use of the bivariate probit estimation to jointly estimate the two binary equations.

Contrary to our expectation, gender has no significant impact on working and schooling decision when these decisions are taken jointly. This is an indication that there exists no gender bias in children's time allocation, thus both boys and girls in Ghana have equal chance to work

and/or go to school. This result is contrary to that of Nielsen (1998, pp. 15-22) and Canagarajah and Coulombe (1997, pp. 13-26) who both found a gender gap in favor of boys for schooling decision in Zambia and Ghana respectively. Our findings also deviate from that of Sasaki and Temesgen (1999) who also found a gender gap in favor of boys for schooling, and in addition found a gender gap in favor of girls for working decision in Peru.

Age has been found to jointly determine child work and school, in both cases there is a non-linear relationship as expected. Thus, a child is more likely to work as he or she grows older, but this increases at a decreasing rate in latter ages. The situation is the same for schooling decisions, thus the school attendance-age curve is concave.

With regards to the parents' characteristics, it is interesting to find out that with the exception of the presence of the father in the house which jointly determines child work and school, none of the other characteristics of the parents jointly determine child work and school. For instance, the intergenerational variables, viz. the presence of the mother in the house and fathers' education impact working decision but have no significant effect on the schooling decision.

The poverty status of the household was included in the joint decision estimation, since we believe it may have impact on the schooling decision and as such jointly determine work and school. Estimates from the bivariate probit estimation have proven that indeed poverty is one of the main causes of child labor. The result from the table shows that while very poor households are more likely to cause their children to work, they are less likely to send them to school. These results are strongly significant and have confirmed the poverty hypothesis of child labor.



We included the religious background of households in the joint decisions because most of the religious organizations in Ghana own and run the very good schools and as such have a significant influence not only on the values of education in societies but also on the facilities they make available through free or subsidized education facilities, which provides the incentive for parents to send children to school (Canagarajah & Coulombe, 1997, p. 19). The results show that religious background does not jointly determine child work and schooling decisions, but children from Christian households (the reference group) are more likely to go to school than those from a household with no religion. This confirms the findings of Canagarajah and Coulombe (1997, pp. 13-26).

We also included two schooling supply variables in the bivariate probit estimation to test their relevance in the household decision to cause children to work or go to school. These variables are the amount of money spent by the household on schooling expenses (school expenditure) and the distance to school and back home as measured in hours. These variables turned out to be insignificant in the joint decisions.

**Table 5.4: Bivariate Probit for Factors that Jointly Determine Child Work and School**

Variables	Work		School	
	Coefficient	P> Z	Coefficient	P> Z
<b>Individual Characteristics</b>				
Sex	0.0179	0.437	0.0908	0.382

<b>Age</b>	0.3622	0.000***	0.2708	0.053*
<b>Age2</b>	-0.0109	0.000***	-0.0190	0.008***
<b>Parents Characteristics</b>				
<b>Dadchildlaborer</b>	0.4936	0.000***	-0.1962	0.382
<b>Mumchildlaborer</b>	0.6176	0.000***	-0.1743	0.382
<b>Dadinhouse</b>	-0.2479	0.000***	0.3925	0.023**
<b>Dadbasicedu</b>	0.0901	0.226	-0.2498	0.370
<b>DadSecedu</b>	-0.0844	0.059*	0.1230	0.472
<b>Dadhigheredu</b>	-0.3725	0.001***	0.3290	0.321
<b>Muminhouse</b>	-0.3989	0.000***	0.2008	0.255
<b>Mumbasicedu</b>	-0.1319	0.084*	-0.3665	0.213
<b>MumSecedu</b>	-0.0988	0.103	-0.2134	0.308
<b>Mumhigheredu</b>	-0.3381	0.174	4.7802	0.999
<b>Household Characteristics</b>				
<b>Householdsize</b>	0.0039	0.293	0.0549	0.013**
<b>Verypoor</b>	0.1176	0.001***	-0.7149	0.000***

<b>Poor</b>	0.1101	0.000***	-0.2358	0.112
<b>Noreligion</b>	-0.0229	0.740	-0.6766	0.017**
<b>Muslims</b>	-0.1296	0.000***	-0.1367	0.340
<b>Schexp</b>	-0.0000	0.740	0.0002	0.265

**Community Characteristics**

<b>Location</b>	-0.3894	0.000***	0.2362	0.044**
<b>Schdistance</b>	0.0034	0.620	0.8319	0.000***
<b>Publicsch</b>	0.2910	0.000***	5.8695	0.993
<b>Coastal</b>	-0.0723	0.391	0.1157	0.621
<b>Forest</b>	0.5254	0.000***	0.0606	0.762
<b>Savannah</b>	0.4635	0.000***	-0.0191	0.934

---

Rho = -0.1974

---

Likelihood-Ratio Test of rho = 0: Prob > Chi2 =0.0116\*\*

Wald Test: Prob > Chi2 =0.0000

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

Finally on the factors that jointly affect child work and school, the results from the estimation show that the location of a community has a significant effect on both working and schooling decision. The results show that children in the urban areas are less likely to work and more likely to go to school. This result confirms our expectations since a review of the occupational distribution of child labor as done in chapter three showed that agriculture/fishery/forestry was the main occupation that employed the majority of these children. Since this type of occupation is mostly seen in the rural areas; it is therefore consistent to see rural children being more likely to work but less likely to go to school as compared to urban children.

### ***5.3.2 Factors that Determine the Probability of Combining Work and Schooling***

In a country like Ghana where children are likely to undertake multiple activities and where combining school with work is common, assessing factors that affect the likelihood of combining school with work helps better understand the trade-off between child labor and human capital formation. The bivariate probit estimation allows the computation of marginal effects which give the relative magnitudes of particular effects on the joint probability of interest. Table 5.5 reports marginal effects of the probability of combining work and schooling.

It is obvious from Table 5.5 that both boys and girls have equal chance to combine working and schooling activities; hence there is no gender gap in this situation. With respect to the impact of age, the marginal effects show that older children are more likely to combine working and schooling, but the negative coefficient of the age squared shows that, at latter ages this probability increases at a decreasing rate.

For the parent's characteristics, we can see from the table that children whose mothers and/or fathers were child laborers are more likely to combine working and schooling. Those children whose fathers were child laborers are 14.39 percent more likely to combine working and schooling; also those whose mothers were child laborers are 17.92 percent more likely to combine working and schooling than their counterparts. Furthermore, children who live together with their fathers and/or mothers are less likely to combine work and school.

Children whose parents have higher education are less likely to combine work and school. The results show that children whose fathers have higher education are 8.41 percent less likely to combine work and school; also, those whose mothers have higher education are 7.72 percent less likely to combine work and school. These results have confirmed the already mentioned fact that parents' education is very crucial in the fight against child labor.

With regards to the household characteristics, the results from the marginal effect show that household size and the amount of money spent by the household on schooling expenses have no significant effect on the probability of a child to combine working and schooling. Meanwhile, the poverty status of the household was found to significantly affect the probability to combine these two activities. The table shows that very poor households are 3.27 percent more likely to induce their children to combine work and school; hence, poverty is one of the main reasons for child labor in Ghana.

Finally, the location and the ecological zone are shown to have an impact on the probability to combine work and school. The results show that children in the urban areas are 9.98 percent less likely to combine work and school than those in the rural areas. Also, children in the forest and savannah zones are more likely to combine work and school than those in

Accra; thus those in the forest zones are 14.71 percent more likely and those in the savannah zone are 12.86 percent more likely to combine work and school than those in Accra.

**Table 5.5: Marginal Effects for the Probability of Combining Work and School**

<b>Variable</b>	<b>Marginal Effect</b>	<b>P &gt; Z </b>
<b>Individual Characteristics</b>		
<b>Sex</b>	0.0048	0.437
<b>Age</b>	0.0973	0.000***
<b>Age2</b>	-0.0029	0.000***
<b>Parents Characteristics</b>		
<b>Dadchlldlaborer</b>	0.1439	0.000***
<b>Mumchlldlaborer</b>	0.1792	0.000***
<b>Dadinhouse</b>	-0.0688	0.000***
<b>Dadbasicedu</b>	0.0251	0.243
<b>DadSecedu</b>	-0.0221	0.052*
<b>Dadhigheredu</b>	-0.0841	0.000***

<b>Muminhouse</b>	-0.1180	0.000***
<b>Mumbasicedu</b>	-0.0335	0.066*
<b>MumSecedu</b>	-0.0252	0.089*
<b>Mumhigheredu</b>	-0.0772	0.099*

#### **Household Characteristics**

<b>Householdsize</b>	0.0010	0.293
<b>Verypoor</b>	0.0327	0.001***
<b>Poor</b>	0.0304	0.000***
<b>Noreligion</b>	-0.0061	0.738
<b>Muslims</b>	-0.0338	0.000***
<b>Schexp</b>	-0.0000	0.764

#### **Community Characteristics**

<b>Location</b>	-0.0998	0.000***
<b>Schdistance</b>	0.0009	0.620
<b>Publicsch</b>	0.0761	0.612
<b>Coastal</b>	-0.0189	0.379

<b>Forest</b>	0.1471	0.000***
<b>Savannah</b>	0.1286	0.000***

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

## 5.4 Summary

In this chapter we estimated various equations to determine the socio-economic factors of child labor. The chapter began with a description of the variables used in the estimation. It was followed by the test of the poverty hypothesis and the intergenerational transmission of child labor with the use of the univariate logit estimation, where we presented estimations for the pooled sample, for separate gender and for separate locations. Later in the chapter we presented the bivariate probit estimation; which analyzed the factors that jointly determine the probability of child work and schooling decisions, tested the existence of a trade-off between child work and school, and then brought out the factors that determine the probability of combining work and school. The major variables we included in the estimations were that of the child's characteristics, parents' characteristics, household characteristics and community characteristics. These characteristics had very similar impacts in most of the estimations even though there were some differences in the direction and magnitudes of their impact. Below is a summary of the findings.

In the univariate model in which we tried to find out the factors that determined child labor alone, the estimations showed that all of the child's characteristics affected the decision of parents causing their children to work. With the parents' characteristics, it was shown that child



labor in Ghana follows an intergenerational pattern, thus, parents who were once child laborers are more likely to cause their children to work. It was also found that parents' education was an important factor that determines the decision of the parents to cause their children to work, the categorization of the parents' educational level enabled us to see that fathers and mothers with higher education were less likely to cause their children to work as compared to fathers and mothers with no education.

With regards to the households' characteristics, it was confirmed that poverty is a major determinant of child labor. The addition of the community characteristics shows that the location of the community, being it urban or rural is an important determinant of child labor; also the type of the ecological zone has a significant impact on child labor. Finally, the ownership of the schools in the community either publicly owned or privately owned was a factor too. The separation of the sample into boys and girls and into urban and rural areas also shows similar results and these prove the robustness of the estimates although certain additional differences were observed.

In the bivariate model we tried to determine the factors that jointly affect child work and school, to test the existence of a trade-off between child work and school and to find out the factors that determine the probability to combine work and school. The results show that the coefficient of correlation between the errors in the two equations (equation for work and equation for school) is negative, which proves the existence of a tradeoff between working and schooling. Also, the likelihood-ratio test which was used to test whether the coefficient of correlation between the errors in the two equations is statistically different from zero showed that the errors were significantly correlated and that was a justification for the use of the bivariate probit estimation to jointly estimate the two binary equations.

The bivariate probit estimation shows that the factors that jointly determine child work and school are the age of the child, the presence of the father in the house, the poverty status of the household and the location of the community (urban or rural). The other factors included in the estimation either determined child work alone, schooling alone or none of the two.

The estimate of the marginal effects which tells us the factors that determine the probability of combining work and school shows that factors like age of the child, fathers and mothers having been child laborers, the presence of the father and/or the mother in the house, parents' educational level, poverty status of the household, location of the community and the type of ecological zone were the main determinants of the probability to combine work and school.

## CHAPTER SIX: DETERMINANTS OF CHILD LABOR SUPPLY IN GHANA

### 6.0 Introduction

In this chapter we investigate the factors that determine the hours supplied by working children. The chapter begins with an explanation of the theoretical framework within which all estimations are made and then the estimation strategy used is also presented. This is followed by a description of the variables used and how they are measured. Finally, the results from the estimations and the interpretations of these results are presented.

### 6.1 Theoretical Framework

To find out the factors which determine the number of hours a child supplies to the labor market, we fall on the model used by Edmonds (2003, pp. 21-22), but with a little digression. Consider a household with a parental utility function and one child. The parent makes all household decisions. A child divides its time between work in household production ( $H$ ), and education ( $E$ ). Thus,  $H+E=1$ . Household production in our case includes all work done by the child for enterprise owned by the household. Here the child's time in education includes classroom time and time spent studying as well as time in leisure and play. The child's well-being ( $V$ ) depends on the time it spends in education according to the twice-differentiable function  $R(E)$  which models child well-being as a function of education which increases at a diminishing rate. The return to child time in household production depends on the fraction of child time spent in household production and on the household attributes  $A$ .  $F(H;A)$  is the extra household consumption that stems from a child spending a fraction  $H$  of its time in household production.

$F(.)$  is twice-differentiable with positive, diminishing marginal product in  $H$ . Thus, total household consumption depends on the non-child labor earnings  $Y$  and child contribution to household production  $F(H;A)$ :  $c=Y+F(H;A)$ . A parent with preferences over household consumption ( $c$ ) and child well-being decides how to allocate child time. Let the parent's preferences be represented by the twice-differentiable utility function  $u(c, V)$  increasing in both of its arguments at decreasing rates. In this set-up, the parent's problem reduces to one of choosing the fraction of child time spent in education, household production, and market work subject to the adding-up constraint on child time:

$$\text{Max}_{E, H} u\{Y + F(H; A), R(E)\} \text{ subject to } E + H = 1. \quad (6.1)$$

The solution to this problem in Equation (6.1) is a child labor supply function as follows:

$$H = h(Y, E, A) \quad (6.2)$$

The conceptual model in Equation (6.2) is made operational by being modeled as an econometric child labor supply model. The econometric child labor supply model is expressed as:

$$H_i = \alpha_i + \beta_1 Y_i + \beta_2 E_i + \beta_3 A_i + \varepsilon_i \quad (6.3)$$

Where  $H$  is the number of hours a child works.  $Y$  is the household income without child income,  $E$  is hours spent in school,  $A$  is a vector of other child, parent, household and community characteristics and  $\varepsilon$  is the error term.

## 6.2 Estimation Strategy

The labor supply functions derived using the framework explained above does not provide a complete model for empirical estimation for two reasons. First, the function derived assumes that the child works, i.e., an interior solution to the maximization problem facing the parent. Second, data used for econometric estimations pertain to different individuals with different tastes for work, that is individuals differ not only in terms of the observable variables (i.e.,  $Y$ ,  $E$ ,  $A$ ) but also in terms of the non-observable variables (which are represented by a random error term,  $\epsilon$ ).

Ordinary least squares (OLS) estimates of a function like the one depicted in Equation (6.3) will suffer from selectivity bias since the error term in the sample used for estimating the child labor supply parameters will not be a zero-error random variable. The problem may arise because the error term that determines the sample selection rule will be correlated with the error term of the supply function. This occurs whenever the selection rule is endogenous to labor supply, e.g., selecting on the basis of income or employment, as in use of the sample of working children. The practice is to correct for the sample selectivity bias by using the Heckman two-stage procedure. This Heckman two-stage procedure involves estimating a participation function in the first stage; either a probit or logit model is estimated depending on the assumptions made regarding the error term, to derive an inverse Mills ratio. The inverse Mills ratio so derived is then used in the second stage OLS estimation as a regressor to correct for the specification bias that results from excluding the sample of non-working children from the estimated equation.

Labor supply of children concerns incidence (participation in the labor force) and intensity (hours of work). We express all data for child labor in terms of hours. The study begins by considering incidence of child labor, that is the decision to work or not to work. In this case the dependent variable which is the probability of child work, assumes the value of one (1) if the

child works and zero (0) if the child does not work. If we make the assumption that the error term is a normally distributed random variable, a separate probit equation is estimated in Equation (6.4) as follows:

$$P(Q_i = 1) = \alpha_i + \beta_1 Y_i + \beta_2 E_i + \beta_3 A_i + \varepsilon_i \quad (6.4)$$

Where  $Q = 1$  if the child works and  $Q = 0$  if the child does not work.

This equation is then used to derive the inverse Mills ratio which is used as an explanatory variable in the child labor supply function in Equation (6.5).

$$H_i = \alpha_i + \beta_1 Y_i + \beta_2 E_i + \beta_3 A_i + \beta_4 INV + \varepsilon_i \quad (6.5)$$

### 6.3 Description and Measurement of Variables

In this section the variables used by the study in this chapter are discussed. The section starts with a description of the dependent variables for the various estimations and then the independent variables follow; it also discusses the measurement of these variables.

The dependent variable in Equation (6.4) is the probability for  $Q=1$  and  $Q$  has the value of one (1) if the child works and zero if otherwise. In the GLSS6 questionnaire the child was asked to tell whether or not he or she was engaged in any work during the last seven days.

The dependent variable  $H$  in Equation (6.5) is measured by the number of hours per week that the child supplies to work, thus this could include working for income or not. The respondents were asked to mention the number of hours they worked in the last seven days before the interview. The description and measurement of the independent variables and their expected impacts are discussed below.

1.  $Y$  is the household income. This is measured as the sum of all income accruing to the household without that of the child. Thus, total household income is the summation of total household wage income, income from non-farm enterprise, income from agricultural activities, rental income and income from remittances. We expect that household income works in the direction of reducing the hours supplied by the child; this is because households with higher income can afford the basic needs of the child and as such have no reason to cause children to work.
2.  $E$  is hours spent in school by the child. We use hours spent in class for this study since that is what is reported in the data. In the survey, the child was asked to tell how many hours he or she spends in class. We expect that this works in the direction of reducing the hours supplied by the child to work. Intuitively, children who spend more hours in class have fewer hours to work.
3.  $A$  is a vector of other child, parent, household and community characteristics.

The variables that represent the child characteristics are;

*Age*, this describes how old the child is and it is measured in years. Age squared is also included in the estimation in order to model the effect of differing ages, rather than assuming the effect is linear for all ages. A non-linear relationship is therefore expected, thus, age is expected to have a positive effect on hours of work, but its square ( $A^2$ ) is expected to have negative effect on hours of work

*Sex*, this describes the gender of the child, and is measured as a binary variable. It is valued as one (1) for males and zero (0) for females. The impact of the gender of the child on the hours he or she supplies to work cannot be determined a-priori.

*The type of employment the child is involved in*, for the purpose of this study, the type of employment has been categorized into paid employee, non-agricultural workers, agricultural workers, unpaid family workers, domestic and casual workers and apprentice and other workers. Unpaid family worker is used as the reference point. The categorization is justified to establish the impact of the type of employment a child is involved on his or her labor supply. The direction of the impact is also indeterminate a priori. One may argue that children can choose to work more or less depending on the kind of work they are engaged in.

### ***Parent Characteristics***

Since the decision to work by a child is usually in the hands of the parents or the household head, we believe there are certain specific characteristics of the parents that will influence the number of hours a child will supply to the labor market. Such characteristics include whether the mother and/or the father had themselves worked in their infant age. These variables were generated from the main data using the age the parents started working. If a parent started working below the age of 15, then it is assumed that he or she was a child laborer. The impact of parents being child laborers cannot be determined a priori, since it can affect the hours supplied by a child positively or negatively depending on the experience of the parent and the lessons learnt by the parent from having been a child laborer.

Parent characteristics include also the presence of the father and/or the mother in the house; these are two binary variables, viz. Dadinhouse and Muminhouse. These variables assume the value 1 if the respective person lives in the household and 0 if otherwise. In the GLSS6 questionnaire the child was asked to tell whether the father and/or the mother live together with him or her in the same household. We expect that there will be a negative relationship between these variables and the hours supplied by the child. This is because we expect that a household



that has the father and or the mother in the house may think about the future of the child and as such even though they may be compelled to send the child out to work, they will make the child work less hours in order to have some time for schooling too.

### ***Household Characteristics***

*The size of a household*; this tells us the number of people living together with the child and eat from the same pot of food. It is included in the labor supply equation because it is expected that as the household size increases (mainly due to more children) there will be more pressure on the income of the household and as such children will be compelled to supply more hours of work to support the household.

*School expenditure*; this is measured as the amount of money the household spends on the child's education. It is the sum of expenditure on school fees, Parents and Teachers Association (PTA) dues, expenditure on uniform, expenditure on books, transportation to and from school, expenditure on extra classes and expenditure on food as mentioned in the GLSS6. We expect that this tends to increase the hours supplied by the child.

### ***Community Characteristics***

We include some community characteristics such as the geographical location of the community (urban or rural), and ecological zone of the community. The location is categorized into rural and urban areas, and the ecological zone is also categorized into Accra, Coastal areas, Savannah areas, and Forest areas. For the impact of the ecological zone, Accra is used as the reference group. We check whether the location of the community has some influence on the hours supplied by the child.

We include the ownership of school (publicly or privately owned) in the labor supply equation because we expect that children who attend privately owned school spend more hours

in school and will therefore have less time to supply work than those who attend publicly owned school.

Finally, school distance has been shown by previous studies (see for instance Canagarajah and Coulombe, 1997, pp. 13-26) to have an influence on the hours of work supplied by a child; we therefore include this variable in the labor supply equation. School distance is measured as the number of hours a child has to spend to go to school and back. We expect that it would have a negative impact on the hours supplied by a child to work, this is because, the more the hours spent by a child to go to school, the lesser the hours left to work.

Other variables which are included in the selection equation are the parents' education which has been categorized into no education, primary education, secondary education and tertiary education. These variables are dummy variables with the value of one (1) if the statement is true for the parent and zero (0) if otherwise. No education is used as the reference group. Table A5.1 in the appendix presents a summary of all the variables used in the estimations.

## 6.4 Determinants of Child Labor Supply

In this section we present the results of the Heckman Selection estimation of the labor supply equation explained in previous sections. The ordinary least squares (OLS) regression results which is the second stage of the two-step Heckman Selection estimation for the pooled sample is presented in Table 6.1, while the results for the selection equation for the pooled sample is presented in Table A6.1 in the appendix. We later in this section present the OLS results for the separate gender in Table 6.2 and its respective selection equation in Table A6.2 in the appendix.

### 6.4.1 Results for Pooled Sample

This Subsection discusses the impact of the independent variables on the hours of work supplied by children. The statistical significance of the **z-test** on the inverse mills ratio shows that the labor supply function estimated suffers from sample selectivity bias; hence the Heckman two stage technique is an appropriate technique for estimating the labor supply function since the OLS approach could not have solved the problem of sample selectivity bias. The statistical significance of the Wald test also confirms the overall significance of the estimation.

The results from the Heckman Selection Estimation in Table 6.1 show that factors such as the age of the child, certain household, parents and community characteristics are the main determinants of child labor supply in Ghana.

The statistical insignificance of the coefficient estimate of the sex variable suggests that there is no statistical difference between the hours supplied by boys and girls. Hence there is no gender gap in the hours supplied to work by children in Ghana.

**Table 6.1: Child Labor Supply Function for Pooled Sample; OLS Results of Heckman**

**Selection Estimation**

<b>Independent Variables</b>	<b>Coefficients</b>	<b>Z</b>	<b>P&gt;  Z  </b>
<b>Individual Characteristics</b>			
<b>Sex</b>	-0.6429	-0.82	0.410
<b>Age</b>	-9.8050	-5.75	0.000***
<b>Age Squared</b>	0.3312	4.71	0.000***
<b>Hours in Class</b>	0.0258	0.95	0.345
<b>Apprentice</b>	12.086	2.39	0.017**
<b>Paid Employee</b>	8.1778	1.44	0.150
<b>Non-Agric Worker</b>	2.0252	0.46	0.643
<b>Agric Worker</b>	-0.8053	-0.41	0.684
<b>Domestic Worker</b>	0.475	0.12	0.908
<b>Parents Characteristics</b>			
<b>Dadchildlaborer</b>	-10.8701	-6.50	0.000***

<b>Mumchildlaborer</b>	-14.5429	-7.31	0.000***
<b>Dadinhouse</b>	6.7501	4.82	0.000***
<b>Muminhouse</b>	8.5622	5.33	0.000***

**Household Characteristics**

<b>Household Size</b>	0.2796	2.22	0.026**
<b>Log Income</b>	-1.237	-3.23	0.001***
<b>School Expenses</b>	-0.0041	-2.33	0.020**

**Community Characteristics**

<b>Location</b>	9.7295	5.55	0.000***
<b>Publicsch</b>	-10.8025	-10.7	0.000***
<b>Coastal</b>	-12.787	-3.95	0.000***
<b>Forest</b>	-26.7118	-7.87	0.000***
<b>Savannah</b>	-20.9872	-5.99	0.000***
<b>School Distance</b>	0.2077	1.22	0.224

---

Number of observation: 19522

**Prob > Chi2 =0.0000**

---

---

**Mills-Lambda: Prob > Z =0.000**

NB: \*\*\* significant at 1%    \*\* significant at 5%    \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

The negative coefficient estimate of the age variable and positive coefficient for the age squared variable suggest that the hours of work-age curve is convex. Thus, older children work fewer hours than younger children. However, the positive coefficient estimate of the age squared variable suggests that the negative slope of the work-age relationship becomes flatter (effect in absolute size declines), i.e. the negative effect of an additional year becomes smaller with increasing age. This result contradicts the findings by Ray (2000a, p. 356), who found the opposite. This result makes sense in that when a child is younger he or she may be compelled by the parent to work more hours, but as he or she grows older and realizes the importance of schooling, he or she may stop working and go to school instead or combine both, thereby reducing the hours he or she initially supplies.

The inclusion of the type of employment has shown that children who work as apprentice supply 12 hours more than children who work as unpaid family workers (the reference group). This result is not surprising since apprenticeship by its nature may compel children to work more than they really want to.

With regards to the impact of parents' characteristics on the hours of work supplied by children, the results show that children whose parents were child laborers supply fewer hours to work than those whose parents were not child laborers. One reason for this result could be that parents, who were child laborers themselves and had to feel the effect of child labor or felt

disadvantaged as a result of working at an early age, may allow their child to work only few hours even if they are compelled to make work because of poverty.

Also we can infer from the results that children who live with their fathers and/or mothers supply more hours than those who do not live with their parents. This result even though contrary to our expectation is highly significant and therefore calls for further investigations. Household income has been shown by the results of the estimation to negatively influence the hours supplied by children. This result shows that when annual family income increases by (more than/less than) 125 percent (to an income level 2.25 times higher), and everything else does not change, then child labor supply of this family will decrease by (more than/less than) one hour per week.<sup>9</sup> It is necessary to note that the effect of household income on hours of work is rather small and diminishes for larger incomes. This result also confirms the fact that poverty is one of the reasons for child labor and as such any attempt to increase the economic status of poor households could help reduce child labor.

There is a positive impact of household size on the hours supplied by a child. Thus, an increase in the number of people in the household by 1 person leads to an increase in the hours supplied by a child by 0.27 hours. This result makes sense in that, as the household size increases there is more pressure on the income of the household since more people in the household implies higher financial burden. This may compel children to work more hours to support the household.

---

<sup>9</sup> Let  $\Delta y$  denote the change in child labor and  $x$  annual family income, then we have, from Table 6.1, that  $\Delta y = -1.237 \times (\ln x_2 - \ln x_1) = -1.237 \times \left( \ln \frac{x_2}{x_1} \right)$ . Since we are interested in one hour of child labor less per week, we set  $\Delta y = -1$ . Then this formula becomes  $\frac{1}{1.237} = \left( \ln \frac{x_2}{x_1} \right)$  and, furthermore,  $\exp(0.8084074) = 2.2443309 = \frac{x_2}{x_1}$ . Hence, when annual income  $x_1$  increases 2.2443309-fold to  $x_2$ , weekly labor supply of child labor decreases by 1 hour per week.

With regards to the impact of the community characteristics on the hours of work supplied by children, the results show that children living in the urban areas supply more hours to work than their counterparts in the rural areas. This result is confirmed by the inclusion of the ecological zone dummies which show that children in the coastal, forest and savannah areas which are all rural by nature supply fewer hours than those in Accra (the reference group). The possible reasons for this result may be that, firstly, there are more jobs in the urban areas than in the rural areas and secondly, children in the urban areas are able to work at night where electricity is accessible and hence can work more than the rural folks who may not have access to light in the night.

#### ***6.4.2 Results for Separate Gender***

This subsection presents the result of the labor supply function estimated separately for boys and for girls using the Heckman Selection Estimation strategy. The purpose of the split of the data is to allow the coefficients of all variables to differ between boys and girls and also to facilitate the comparison of the labor supply function for boys and girls.

The results show that the direction of the impact of age on the hours of work supplied by boys and girls separately is not so different from that of the pooled sample, thus, a convex work-age curve is seen in both estimates, but the magnitude of this impact is a bit different. Thus, the degree of responsiveness by girls is higher than that of boys; in other words, the work-age curve is more convex for girls than for boys.



The results from the type of employment show that girls are not affected by the type of work they do, on the other hand, boys who are apprentice work more hours than boys who work as unpaid family workers.

The direction of the impact of parents' characteristics on the labor supply for boys and for girls separately is the same as on the pooled sample. However, there is a slight difference in the magnitude; thus, girls are more responsive to the parents' characteristics than boys. The results show that both boys and girls whose parents were child laborers supply fewer hours than other boys and girls whose parents were not child laborers.

**Table 6.2: Child Labor Supply Function for Separate Gender; OLS Results of Heckman Selection Estimation**

	<b>Boys Only</b>		<b>Girls Only</b>	
<b>Variables</b>	<b>Coefficient</b>	<b>P&gt; Z </b>	<b>Coefficient</b>	<b>P&gt; Z </b>
<b>Individual Characteristics</b>				
<b>Age</b>	-5.9600	0.001***	-13.1125	0.000***
<b>Age Squared</b>	0.1670	0.028**	0.4870	0.000***
<b>Hours in class</b>	0.0419	0.214	-0.0061	0.877
<b>Paid Employee</b>	9.3635	0.211	6.0729	0.461

<b>Non Agric Worker</b>	0.5967	0.925	2.4334	0.666
<b>Agric Worker</b>	-0.0573	0.980	-1.9087	0.538
<b>Domestic Worker</b>	-5.469	0.288	6.2838	0.282
<b>Apprentice</b>	21.7400	0.000***	1.1377	0.886
<b>Parents Characteristics</b>				
<b>Dadchildlaborer</b>	-9.0206	0.000***	-11.8678	0.000***
<b>Mumchildlaborer</b>	-12.4139	0.000***	-15.3123	0.000***
<b>Dadinhouse</b>	5.2496	0.001***	7.8669	0.001***
<b>Muminhouse</b>	6.8973	0.000***	9.521	0.000***
<b>Household Characteristics</b>				
<b>Log income</b>	-0.7891	0.069*	-1.652	0.013**
<b>Householdsize</b>	0.3405	0.025**	0.2396	0.199
<b>Sch Expenses</b>	-0.0040	0.105	0.0054	0.021**
<b>Community Characteristics</b>				
<b>location</b>	6.7150	0.001***	11.364	0.000***

<b>Publicsch</b>	-9.1721	0.000 <sup>***</sup>	-12.544	0.000 <sup>***</sup>
<b>Coastal</b>	-19.4822	0.000 <sup>***</sup>	-7.3504	0.100 <sup>*</sup>
<b>Forest</b>	-31.4613	0.000 <sup>***</sup>	-22.088	0.000 <sup>***</sup>
<b>Savannah</b>	-26.0440	0.000 <sup>***</sup>	-16.0027	0.001 <sup>***</sup>
<b>Sch Distance</b>	0.3882	0.063 <sup>*</sup>	-0.0299	0.904

---

Prob > Chi2 =0.0000 (Boys only)

Prob > Chi2 =0.0000 (Girls only)

Mills-Lambda: Prob > Z =0.000 (Boys only)

Mills-Lambda: Prob > Z =0.000 (Girls only)

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

With regards to the household characteristics, it can be seen from the table that household income has a negative impact on the hours of work supplied by both boys and girls and this confirms that of the pooled sample. However, while household size significantly affects the labor supply for boys positively, it has no significant impact on the labor supply for girls. This result shows us that, when the number of people in the household increases, boys work more hours.

The result from the community characteristics also tells us that both boys and girls in the urban areas work more hours than boys and girls in the rural areas. Furthermore, boys and girls in the coastal, forest and savannah areas supply fewer hours to work than their counterparts in Accra. This is also a confirmation of the result found from the pooled sample.

The statistical significance of the **z-test** on the inverse mills ratio for both estimations shows that the labor supply functions estimated suffers sample selectivity bias and as such the Heckman two stage technique is the best technique for estimating the labor supply functions since the OLS approach could not have solved the problem of sample selectivity bias. The statistical significance of the Wald test for both estimations also confirms the overall significance of the estimations. It is also obvious that the result from the separate gender estimates confirms the findings from the pooled sample and this proves the robustness of the estimates although certain additional differences are observed.

## **6.5 Summary**

The main objective of this chapter is to investigate the factors that determines the work hours supplied by children. The results from the estimation have shown that the major factors that determine child labor supply are age of the child, certain household, parents and community characteristics.

The results from the estimations has shown that there is no statistical difference between the hours supplied by boys and girls, also the hours of work-age curve is convex but more convex for girls than for boys, children who work as apprentice supply more hours than children who work as

unpaid family workers. Children whose parents were child laborers supply fewer hours to work than those whose parents were not child laborers. Household income has a negative impact on children's hours of work, also the more people in the household the more hours supplied by a child.

Finally, the results have shown that children living in the urban areas supply more hours of work than their counterparts in the rural areas.

## CHAPTER SEVEN: CHILD LABOR AND ADULT LABOR MARKET

### 7.0 Introduction

In this chapter we seek to achieve two main objectives; firstly, to test for the substitutability between child and adult labor and secondly to analyze the impact of child labor on the Ghanaian labor market. The chapter begins with a correlation analysis of the wages and hours of work of children and adults. This is followed by a brief discussion of the theoretical framework within which our analysis of the impact of child labor on the Ghanaian labor market is accomplished. A description of all the variables used in the estimations and the results of the estimations are then presented.

### 7.1 Substitutability between Child and Adult Labor

Basu and Van (1998, pp. 416-422) presented a fundamental framework of child labor with two important axioms: *the Luxury Axiom* and *the Substitution Axiom*, which was discussed in the literature review in Chapter 2. Fan (2011, pp. 34-35), in his quest for understanding the relationship between the luxury axiom and the substitution axiom analyzed that, when adults' wage rate is low so that a typical household faces a subsistence constraint in consumption, parents' income turns out to be the key determinant of child labor. In such situations, the Luxury Axiom holds strictly and children's working time decreases as parents' income rises. On the other hand, when adults' wage rate is relatively high so that the subsistence constraint is not binding, the substitutability between child labor and adult labor now becomes the major determinant of child labor. He further argued that, under some circumstances the substitutability between child labor and adult labor may matter much more than parents' absolute income for

children's labor market participation. Fan's argument therefore points to the fact that the substitutability between child labor and adult labor is a major or even the most important cause of child labor.

The purpose of this subsection is to test the Substitution Axiom of Basu and Van (1998, pp. 416-422) in the Ghanaian labor market. We do this by running a correlation test between children's and adults' hours of work and also between children's and adults' wage rate. A significant negative correlation between child's and adults' hours of work and a significant positive correlation between children's and adults' wage rate implies that child labor is a substitute for adult labor. The reverse is therefore true for complementarity between child labor and adult labor. Child earning is used as a proxy for wages. The respondents were asked to specify the amount they earned from working, and tell how often they receive this income, thus whether daily, weekly, fortnightly, monthly or yearly. We therefore generate hourly wage by dividing this earning by the time unit and then divide that value by the hours supplied.

The correlation analysis as shown in Table 7.1 shows that there is a negative correlation between child's and adult's hours of work and a positive correlation between children's and adults' wage rate. The direction of the correlation indicates substitutability between adults and children but these are not statistically significant<sup>10</sup>; therefore, we do not have enough evidence to confirm that the Substitution Axiom of Basu and Van (1998, pp. 416-422) holds for the Ghanaian labor market. We can attribute this lack of evidence to lack of data on children wages.

---

<sup>10</sup> This is probable so because the great majority of the children do not receive wages.

**Table 7.1: Pairwise Correlation between Adults and Children**

---

	<b>AdultWage</b>	<b>ChildWage</b>	<b>AdultHWk</b>	<b>ChildHWk</b>
<b>AdultWage</b>	1.0000			
<b>ChildWage</b>	<b>0.0106</b>	1.0000		
AdultHWk	0.0534	-0.0178	1.0000	
<b>ChildHWk</b>	-0.1049*	0.1383*	<b>-0.0089</b>	1.0000

---

NB: \* significant at 5%

---

*Source:* Constructed by Author from GLSS 6 (20012/13)



## 7.2 Impact of Child Labor on Labor Market Outcomes

In this section we seek to analyze the impact of child labor on the Ghanaian labor market. We present a brief discussion of the theoretical framework within which our analysis is done. This is followed by a description of all the variables used in the estimations and then the interpretations of the results.

### ***7.2.1 Theoretical Framework and Econometric Approach***

In order to measure the impact of child labor on the major labor market outcomes such as adult wages, adult unemployment, adult employment, adult hours of work and adult labor force participation, we build a framework that follows closely the framework described by Altonji and Card (1991, pp. 203-206). Even though their framework analyses the impact of immigration on labor market outcomes, we employ it because we believe that the existence of child labor in a labor market is analogous to the entry of immigrants into the labor market. We therefore present a brief discussion of their model.

Consider a model in which there are many towns (this is referred to as enumeration area in our data), and in each town there are adult workers and child workers. We assume that the demand for all labor is a decreasing function of wages within each town. As noted by Altonji and Card (1991, pp. 203-206), this model illustrates that the addition of child workers to the labor market increases the supply of labor. It can be shown (see Altonji and Card (1991, pp. 203-206) for details) that this model leads to a relationship between the rate of child labor and the wages of adults and other labor market outcomes as follows:

$$Q_j = \delta C r_j \tag{7.1}$$

Where  $Q$  represents the labor market outcomes,  $Cr$  is the rate of child labor and  $j$  represents the town (enumeration area in the case of our data).

In the empirical analyses the effect of child labor on labor market outcomes are estimated as follows

$$\ln W_j = \beta X_j + \delta Cr_j + \varepsilon_j \quad (7.2)$$

Where  $\ln W_j$  is the log of adult mean wage of area  $j$ .

$X_j$  is the vector of the means of explanatory variables such as age and educational levels of adults and the geographical location of an enumeration area.

$Cr_j$  is the rate of child labor in area  $j$ .

$\beta$  is a vector of parameters.

$\delta$  is the effect of child labor on adult wage and  $\varepsilon_j$  is the residual term.

Equation (7.2) describes the impact of child labor on adult wages. The effect of child labor on adult unemployment, adult employment, adult hours of work and adult labor force participation is described by Equation (7.3);

$$Q_j = \beta X_j + \delta Cr_j + \varepsilon_i \quad (7.3)$$

where  $Q_j$  stands as proxy for the rate of adult employment, the rate of adult unemployment, average hours of work for adults and the rate of labor force participation in area  $j$ , the rest of the variables are as defined above. We estimate Equations (7.2) and (7.3) above using ordinary least squares (OLS) and instrumental variable (IV) approaches of estimation. For the IV approach we

use the share of mothers and share of fathers who were child laborers as instruments for the rate of child labor

We acknowledge that the use of aggregate data to estimate the above equations has some limitations. In particular, the factors affecting labor market outcomes are often poorly captured by aggregate variables such as average educational level and average age. However, analyses based on aggregate data are consistent with findings of micro level studies.

### ***7.2.2 Description of Variables***

In this section we discuss the variables used in this chapter. This section starts with a description of the dependent variables for the various estimations followed by the independent variables; it also discusses the measurement of these variables and presents their statistical description.

#### ***Dependent Variables***

The main labor market outcomes which we chose for our analysis are adults' wage, adult employment rate, adult unemployment rate, adults' hours of work and labor force participation rate. Adults' wage is measured as the average wage per day of adults in an enumeration area; we use the log of this variable in the estimations. The adult employment rate is measured as the number of employed adults in an enumeration area divided by the number of people in the labor force. The labor force consists of people above the age of 14 who are either employed or unemployed. Adults' hours of work is measured as the average hours of work supplied by adults in a week in each enumeration area. Finally, the labor force participation rate (LFPR) is measured as the number of people in the labor force divided by the total population of each area.

### ***Explanatory Variables***

Apart from the rate of child labor, which is our variable of interest and is measured as the number of working children in an enumeration area divided by the total number of children in that area, we also include other variables that are known theoretically to determine labor market outcomes. These are the average age of adults in each enumeration area and the average educational level of these adults in the enumeration area. Age is measured in years and the educational levels are assigned integers with the value of 1 for Kindergarten; 2 for primary and so on till the Tertiary level with the value of 9. We also control for the impact of location and ecological zones. The instruments for the rate of child labor (share of mothers and share of fathers who were once child laborers) are measured as the number of mothers/fathers who were once child laborers in an enumeration area divided by the total number of mothers/fathers in that area. Table 7.2 presents a summary of both dependent and explanatory variables.

**Table 7.2: Definition of Variables used in Estimations**

---

#### **Dependent Variables**

AdultWage: average wage rate per day of adults in each area

AdultEmployment: rate of adult employment in each area

AdultHWk: average hours of work supplied by adults in a week in each area

LFPR: adult labor force participation rate in each area

## **Explanatory Variables**

AdultAge: average age of adults in each area

AdultEdu: average educational level of adults in each area

ChildLabRate: rate of child labor in each area.

MumCLRate: share of mothers who were once child laborers

DadCLRate: share of fathers who were once child laborers

Location: 1 if enumeration area is located in the urban area; 0 if rural

Coastal: 1 if enumeration area is coastal by nature; 0 if otherwise

Forest: 1 if enumeration area is forest by nature; 0 if otherwise

Savannah: 1 if enumeration area is savannah by nature; 0 if otherwise

Accra: 1 if the enumeration area is not characterized by any of the ecologies; 0 if otherwise  
(reference group)

---

Table 7.3 presents a descriptive statistic of all the variables used in this section. The statistics shows that 1200 enumeration areas were used in the estimations, and that the rate of child labor ranges from Zero (0) percent to 100 percent hence there are areas without child labor, but there exist also areas where all children are engaged in some sort of economic activity.

**Table 7.3: Descriptive Statistics of Variables**

---

<b>Variables</b>	<b>Observations</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Dependent Variables</b>					
<b>AdultWage</b>	1200	17.206	28.006	0.278	450
<b>AdultEmployment</b>	1200	69.892	17.774	0	100
<b>AdultUnemployment</b>	1200	30.108	17.774	0	100
<b>AdultHWk</b>	1200	40.752	11.686	3	78.571
<b>LFPR</b>	1200	51.091	20.363	21.25	96.667
<b>Explanatory Variables</b>					
<b>ChildLabRate</b>	1200	20.987	26.625	0	100
<b>MumCLRate</b>	1200	36.205	36.322	0	100
<b>DadCLRate</b>	1198	37.493	38.131	0	100
<b>AdultAge</b>	1200	36.443	3.843	27.731	53.308
<b>AdultEdu</b>	1200	3.294	1.087	0.867	7.83

---

*Source:* Constructed by Author from GLSS 6 (20012/13)

### **7.2.3 Results for Impact of Child Labor on Labor Market Outcomes**

The results from both estimation approaches show that child labor has a significant effect on all the labor market outcomes under our study, even though there are little differences in the magnitudes of this impact on urban and rural communities. Tables 7.4 and 7.5 present the results from the OLS and the IV estimations respectively for the pooled sample, the results from both estimations for the separate location samples are presented in Table 7.6. We report only the effect of child labor on the dependent variables since it is our main variable of interest. The coefficients for the control variables are reported in the appendix.

The OLS and IV estimation approaches produced similar impact of child labor on all the labor market outcomes; however, we base our interpretation on the coefficients from the IV estimates. This is because the Wu-Hausman test for endogeneity of the main variable of interest (rate of child labor) shows that with the exception of the adult wage equation, the rate of child labor is endogenous in all the other labor market outcome equations.

Table 7.5 shows that child labor has a negative impact on adults' wage; thus, an increase in the rate of child labor by 1 percent causes a 0.5 percent reduction in adults' wage, Table 7.6 (separate location sample) shows that this is only true for those in the urban areas and that child labor has no significant effect on the wages of adults in the rural areas. Our results confirm the conclusion of Galli (2001, pp. 13-20) who also found that child labor has a negative impact on adults' wages.

**Table 7.4: Impact of Child Labor on Labor Market Outcomes; Pooled Sample (OLS)**

Dependent Variables	Child Labor	R <sup>2</sup>	F- Statistics	Observations
<b>AdultWage</b>	-0.002**	0.23	48.15***	1120
<b>AdultEmployment</b>	-0.344***	0.34	89.29***	1199
<b>AdultHWk</b>	-0.069***	0.28	67.70***	1199
<b>LFPR</b>	-0.004	0.90	1531.19***	1199

NB: \*\*\* significant at 1%    \*\* significant at 5%    \* significant at 10%

*The result for adult unemployment is not shown since it has the same Figures as that of the adult employment but in the opposite direction*

**Source:** Constructed by Author from GLSS 6 (20012/13)

The coefficients of child labor in the employment and unemployment equations show that child labor reduces the demand for adults' labor, in other words, child labor increases unemployment. We can therefore conclude that an increase in the rate of child labor by 1 percent causes adults' employment to reduce by approximately 0.5 percent or adult's unemployment to increase by 0.5 percent. This result confirms the findings by Doran (2012, pp. 17-20) who also found that decreasing child labor is accompanied by increasing adult labor demand. The direction of the effect is the same in both the urban and the rural areas; however, the only difference is that the magnitude of the impact is higher in the urban areas than in the rural areas,



thus 0.4 for rural dwellers and 0.6 for urban dwellers. This is not surprising, since there are more jobs in the urban areas than in the rural areas.

**Table 7.5: Impact of Child Labor on Labor Market Outcomes; Pooled Sample (IV)**

<b>Dependent Variables</b>	<b>Child Labor</b>	<b>R<sup>2</sup></b>	<b>Wu-Hausman test for Endogeneity</b>	<b>F test for Strength of Instrument</b>
<b>AdultWage</b>	-0.005**	0.22	2.19	124.4***
<b>AdultEmployment</b>	-0.495***	0.31	17.41***	144.351***
<b>AdultHWk</b>	-0.143***	0.26	9.33***	144.351***
<b>LFPR</b>	-0.050***	0.89	8.86***	144.351***

NB: \*\*\* significant at 1% \*\* significant at 5% \* significant at 10%

*Source:* Constructed by Author from GLSS 6 (20012/13)

The existence of child labor also leads to a reduction in the number of hours supplied by adults in the labor market. The results from our estimations show that an increase in the rate of child labor by 1 percent leads to a reduction in the average adults' hours of work by 0.14 hours per week. The direction of the impact is the same for both urban and rural dwellers, but the

magnitude of the impact is greater for the urban dwellers than for those in the rural areas, thus 0.22 and 0.12 respectively.

Finally, the results from our estimations show that child labor leads to a reduction in the labor force participation rate; thus an increase in the rate of child labor by 1 percent leads to a reduction in the labor force participation rate by 0.05 percent. The separate location sample also shows that the labor force participation rates for both urban and rural dwellers are negatively influenced by the rate of child labor.

**Table 7.6: Impact of Child Labor on Labor Market Outcomes; Separate Location Sample**

Dependent Variables	URBAN		RURAL	
	OLS	IV	OLS	IV
<b>AdultWage</b>	-0.001	-0.009*	-0.002	-0.004
<b>AdultEmployment</b>	-0.276***	-0.621***	-0.363***	-0.455***
<b>AdultHWk</b>	-0.131***	-0.222***	-0.053***	0.124***
<b>LFPR</b>	-0.001	-0.132**	-0.007	-0.025**

NB: \*\*\* significant at 1% \*\* significant at 5% \* significant at 10%

*Source:* Constructed by Author from GLSS 6 (20012/13)

The impact of child labor on all the five labor market outcomes elucidated above gives us an indication that children are substitutes for adults in the Ghanaian labor market but we cannot

confirm this claim since we don't have enough evidence to proof it. We therefore recommend further studies into this issue.

### **7.3 Summary**

In this chapter we wanted to analyze the impact of child labor on the Ghanaian labor market. We followed the framework used by Altonji and Card (1991, pp. 203-206) and estimated several equations with five different labor market outcomes using both OLS and IV estimation approaches. The results from the IV estimations showed that child labor has a negative impact on adult wages but this was only significant in the urban areas. Child labor also slightly increases unemployment in the adults' labor market; hence a ban on child labor in Ghana can decrease the rate of unemployment a bit. These results also showed that child labor negatively affects adults' hours of work and their participation in the labor market, thus if children are discouraged from working, more adults may have the chance of participating in the labor market and may also supply more hours to work.

The impact of child labor gave an indication that children tend to be substitutes for adults in Ghana, but a test for the correlation between children's and adults' hours of work showed that the correlation is weak and insignificant; hence we cannot conclude that children and adults in Ghana are substitutes in the labor market since we do not have enough evidence to confirm this assertion. A further study into this issue is highly recommended.

## **CHAPTER EIGHT: SUMMARY, CONCLUSIONS AND POLICY**

### **RECOMMENDATIONS**

#### **8.1 Summary of Empirical Findings**

The study basically sought to examine the economic repercussion of child labor on the Ghanaian labor market and also to investigate the socio-economic factors that induce parents to cause their children to work. Specifically, the study sought to investigate whether poverty is an important determinant of child labor in Ghana and whether child labor in Ghana follows an intergenerational pattern. Furthermore, it was studied whether children take jobs from adults, whether child labor depresses the wages of adult and whether child labor is a substitute for adult labor.

A review of the empirical works in Ghana suggested that there are diverging views, on the usually hypothesized relationship between child labor and poverty. Also, the literature review showed that no work has been done in Ghana to analyze the economic repercussion of child labor on labor market outcomes. The issue of whether child labor is an intergenerational phenomenon has not been investigated in Ghana. These were undertaken in our study using Ghanaian data.

A walk through the nature of child labor in Ghana showed that child labor existed in Ghana since the colonial period, but the first ever Child Labor Survey was conducted in 2001. Statistics from other surveys conducted in Ghana showed that the percentage of working children has been between 24-40 percent over the years and that there was always a gender gap in the percentage of working children in Ghana, with the percentage of boys outweighing that of girls.

Child labor has been prevalent in all ten (10) regions of Ghana, but the incidence was higher in the Northern part of Ghana than in the southern part. The agriculture/ fishing/forestry occupation was the major employer of children in Ghana, followed by the service and sales work and furthermore by other general workers such as truck-pushers, porters, laborers and driver-mates. The worst forms of child labor as defined by Article 3 of the ILO Convention (1999a) No. 182 are still in existence in Ghana even though the Government of Ghana has enacted respective legislation and implemented many policies to eradicate child labor in Ghana. Alas, all these measures were not successful enough to terminate child labor in Ghana.

Using a univariate estimation approach, we tried to identify the factors that determined the probability of a child being involved in child labor. The estimates showed that all the child's characteristics affected the decision of parents causing their children to work. With the parents' characteristics, it was shown that child labor in Ghana follows an intergenerational pattern; thus, parents who were once child laborers are more likely to cause their children to work. It was also found that parents' education was an important factor that determined the decision of the parent to cause their children to work. The categorization of the parents' educational level enabled us to see that fathers and mothers with higher education were less likely to cause their children to work as compared to fathers and mothers with no education. It was also discovered that poverty was a very important determinant of child labor. Thus, poverty is one of the main reasons why parents cause their children to work.

Using a bivariate estimation approach, we also tried to determine the factors that jointly affect child work and school, to test the existence of a trade-off between child work and school and to identify the factors that determine the probability to combine work and school. The results showed that the coefficient of correlation between the errors in the two equations (equation for

work and equation for school) is negative, hence proving the existence of a tradeoff between working and schooling. Also, the likelihood-ratio test which was used to test whether the coefficient of correlation between the errors in the two equations was statistically different from zero showed that the errors are significantly correlated and that was a justification for the use of the bivariate probit estimation to jointly estimate the two binary equations.

The bivariate probit estimation showed that the factors that jointly determine child work and school are age of the child, the presence of the father in the house, the poverty status of the household and location of the community (urban or rural). The other factors included in the estimation either determined child work alone, schooling alone or none of the two. The estimates of the marginal effects which informs us of the factors that determine the probability of combining work and school showed that factors like age of the child, fathers and mothers being child laborers, the presence of the father and/or the mother in the house, parents' educational level, poverty status of the household, location of the community and the type of ecological zone a community are associated with are the main determinants of the probability to combine work and school.

In Chapter six, we investigated the factors that determine the work hours supplied by children. Using the Heckman selection estimation approach, we observed that the major factors that determine child labor supply are age of the child and certain household, parents and community characteristics.

The results from the Heckman selection estimate further showed that there is no statistical difference between the hours supplied by boys and girls, a result which implies that gender has no major impact on child labor in Ghana. We also observed that children whose parents were child laborers supply fewer hours of work than those whose parents were not child

laborers. This result as compared to the one observed in the probability to work equations implies that parents who were once child laborers are more probable to cause their children to work due to the fact that they earn lower wages resulting from their lack of higher education. Meanwhile they cause their children to supply less hours of work in order to allow them more time in school, a behavior which may also be attributed to the fact that these parents do not want their children to suffer the consequences of lack of education and as such even though they are compelled to cause their children to work because of poverty, they oblige them to work less due to their own lessons learnt.

In the last but one chapter we wanted to analyze the impact of child labor on the Ghanaian labor market. Following the framework used by Altonji and Card (1991, pp. 203-206) and using both OLS and IV estimation approaches we found that child labor has a negative impact on adult wages but this was only significant in the urban areas. Thus child labor depresses the wages of adults who work in the urban areas. We also observed that child labor slightly increases unemployment and decreases the hours of work supplied in adults' labor market and as a result we believe a ban of child labor in Ghana can decrease the rate of unemployment a bit. These results also showed that child labor negatively affects adults' hours of work and their participation in the labor market, thus if children are discouraged from working, more adults may have the chance of participating in the labor market and may also supply more hours to work.

We were also interested in finding out whether child labor is a substitute for adult labor; hence, we conducted a correlation test between children's wage and adults' wage and between children's and adults' hours of work. The result of the test showed that there is a weak and insignificant correlation between these variables. Hence, we cannot conclude that children and adults in Ghana are substitutes in the labor market even though the impact of child labor gave an

indication that children tend to be substitutes for adults since we do not have enough evidence to confirm this assertion. This therefore calls for further studies into the issue of substitutability.

## **8.2 Conclusion and Policy Recommendations**

The main conclusions drawn from the study is able to generate a number of important implications for policy makers. The impact of child labor on the adult labor market shows that child labor is detrimental to the major labor market outcomes. Child labor depresses adult wages, it takes jobs away from adults, it leads to a reduction in the hours supplied by adults and also leads to a reduction in the participation of adults in the labor market. Therefore, any attempt to reduce or ban child labor will be in favor of adults.

Findings from the study have shown that there is a trade-off between child labor and school attendance. This implies that any time spent by a child working may affect his or her human capital accumulation and in turn lower his or her future earnings as an adult. Evidence from the study has also shown that a child who is involved in any form of economic activity now is more likely to cause his or her own children to work when he or she becomes an adult. This attitude carries over to future generations creating a kind of vicious cycle. Thus, the child work continues. It is therefore important to break this cycle within each household in order to achieve a permanent reduction in child labor. Based on these conclusions, we make the following recommendations:

Poverty has been proven to be an important determinant of child labor in Ghana; hence, policies aimed at alleviating poverty are crucial in tackling child labor and breaking the cycle of poverty transmission from one generation to the next. Policies that are able to break this cycle,



family by family, are potentially the most effective instrument to reduce the incidence of child labor. This type of policy may include for instance a one-time transfer of a critical level of resources to poor families in order to push them up the poverty line. However, this is not achievable by a country like Ghana in the very short run. An alternative policy would be to provide subsidies to working children and/or compensation to their family so as to release the children from work. Also, improving adult employment, in particular creating more jobs would be another important policy recommendation.

The results from our study show that parents with higher education are less likely to cause their children to work; education therefore seems to be essential in breaking the cycle of poverty and child labor. If education is to become a truly effective tool in combating child labor in Ghana, campaigns such as the FCUBE and the Capitation Grant must have more depth than is currently the case. Also a continual general support of children's education will be a very important tool. Such support may include the provision of food and school materials for children. This particular policy is already being implemented by the Government of Ghana but it is not effective; we therefore recommend that the current school feeding program should be enhanced. An alternative policy would be to subsidize families that send their children to school. In such a program, a grant can be provided to the family of any child who is enrolled in school. This particular intervention will address the root cause of child labor (poverty) and at the same time increase school enrolment.

Lastly, measures must be put in place to improve the quality of teachers; also controls must be adopted to make sure that the teachers show up in school. This is very important since it will be futile for children to spend time in school with incompetent teachers.

## APPENDICES

**Table A3.2: Occupational Distribution of Working Children by Age, Sex, Locality of Residence and Region in 2001**

Category	Clerical & Related Workers	Sales & Workers	Services Workers	Agric/ Fishery/ Forestry	Production Workers	Prof. Workers	Other Workers
<b>All</b>	0.0	20.7	1.7	57.0	9.5	0.1	11.0
<b>Age Group</b>							
<b>5 – 9</b>	0.0	17.8	0.7	65.4	6.6	0.1	9.4
<b>10 – 14</b>	0.0	22.1	1.4	55.8	9.8	0.1	10.9
<b>Sex</b>							
<b>Boys</b>	0.0	11.8	0.8	69.0	6.2	0.0	12.1
<b>Girls</b>	0.0	30.4	2.7	44.0	13.1	0.1	9.7
<b>Locality</b>							
<b>Urban</b>	0.1	48.7	6.0	19.9	17.2	0.2	8.0
<b>Rural</b>	0.0	13.2	0.6	67.0	7.4	0.0	11.8

<b>Region</b>							
<b>Western</b>	0.1	26.8	0.6	15.8	5.0	0.0	51.6
<b>Central</b>	0.0	36.9	0.8	45.2	12.0	0.3	4.8
<b>G. Accra</b>	0.0	39.4	7.8	25.1	23.8	0.0	3.9
<b>Volta</b>	0.2	18.2	1.5	64.3	13.7	0.3	1.8
<b>Eastern</b>	0.0	17.9	1.3	72.8	5.5	0.0	2.6
<b>Ashanti</b>	0.0	25.3	3.4	47.7	11.5	0.0	12.2
<b>B. A.</b>	0.0	20.3	0.5	72.5	3.6	0.0	3.0
<b>Northern</b>	0.0	7.8	0.7	80.1	6.5	0.0	4.9
<b>U. East</b>	0.0	9.7	0.3	74.2	11.7	0.0	4.0
<b>U. West</b>	0.0	7.9	0.7	77.6	7.9	0.0	5.9

---

*Source:* GSS, 2003. Child Labor Survey Report

**Table A3.3: Occupational Distribution of Working Children by Age, Sex, Locality of Residence and Region in 2012/2013**

<b>Category</b>	<b>Tech. &amp; Associate Prof.</b>	<b>Service/ Sales Workers</b>	<b>Skilled Agric/ Fishery Workers</b>	<b>Craft &amp; Related Trades Workers</b>	<b>Plant/ Machine Operators &amp; assemblers</b>	<b>Elemen- tary Occu- pations</b>	<b>Other Workers</b>
<b>All</b>	0.0	14.9	76.8	4.2	0.2	3.9	0.1
<b>Age Group</b>							
<b>5 – 7</b>	0.0	9.9	84.2	2.1	0.0	3.7	0.1
<b>8 – 11</b>	0.0	13.7	81.1	2.0	0.1	3.1	0.0
<b>12 -14</b>	0.0	16.2	76.4	3.2	0.2	3.9	0.1
<b>Sex</b>							
<b>Boys</b>	0.0	8.9	83.2	3.6	0.4	3.9	0.1
<b>Girls</b>	0.0	21.4	69.8	4.8	0.1	3.9	0.1
<b>Locality</b>							
<b>Urban</b>	0.0	35.4	50.7	8.3	0.6	4.9	0.0

<b>Accra</b>	0.0	73.2	0.0	10.1	0.0	16.1	0.5
<b>Other</b>	0.0	31.5	55.9	8.1	0.7	3.7	0.0
<b>Urban</b>							
<b>Rural</b>	0.0	6.9	86.9	2.5	0.1	3.5	0.1
<b>Coastal</b>	0.5	15.9	65.8	7.9	0.3	9.5	0.0
<b>Forest</b>	0.0	9.1	83.2	2.8	0.1	4.8	0.1
<b>Savannah</b>	0.0	3.2	93.9	1.6	0.0	1.3	0.0
<b>Region</b>							
<b>Western</b>	0.0	24.6	53.1	4.6	0.1	17.5	0.2
<b>Central</b>	0.0	10.2	83.2	5.2	0.0	1.4	0.0
<b>G. Accra</b>	0.0	68.8	7.2	8.4	0.0	15.3	0.4
<b>Volta</b>	0.0	9.0	82.8	5.4	0.4	2.3	0.2
<b>Eastern</b>	0.1	14.7	75.3	5.7	0.4	3.5	0.2
<b>Ashanti</b>	0.0	18.7	73.5	4.7	0.2	2.8	0.0
<b>B. A.</b>	0.0	11.3	84.1	3.5	0.4	0.7	0.0
<b>Northern</b>	0.0	10.8	85.3	2.3	0.2	1.3	0.1

<b>U. East</b>	0.0	3.1	91.4	2.9	0.1	2.7	0.0
<b>U. West</b>	0.0	1.1	98.1	0.1	0.0	0.7	0.0

*Source:* GLSS 6. Child Labor Report

**Table A3.4: Distribution of Working Children by Period of Activity, Sex, Age Group and Locality of Residence in 2012/2013**

<b>Category</b>	<b>During the Day</b>	<b>At Night</b>	<b>Both Day &amp; Night</b>	<b>Weekends</b>	<b>Sometimes Day Sometimes Night</b>
<b>All</b>	61.7	1.2	2.1	31.0	4.1
<b>Sex</b>					
<b>Boys</b>	61.6	0.9	2.0	32.1	3.4
<b>Girls</b>	61.8	1.4	2.2	29.7	4.9
<b>Age Group</b>					
<b>5 -7</b>	59.0	0.8	2.9	34.7	2.5
<b>8 – 11</b>	59.0	1.0	1.2	34.1	4.7

<b>12 – 14</b>	57.9	1.3	2.1	33.9	4.8
<b>Locality</b>					
<b>Urban</b>	56.3	2.5	3.1	29.5	8.6
<b>Accra</b>	48.0	2.6	6.7	5.9	36.7
<b>Other Urban</b>	57.3	2.5	2.7	32.3	5.2
<b>Rural</b>	63.8	0.7	1.7	31.6	2.3
<b>Coastal</b>	56.5	0.7	1.8	37.6	3.1
<b>Forest</b>	55.9	0.5	1.2	41.1	1.4
<b>Savannah</b>	74.6	0.8	2.3	19.0	3.4

---

*Source:* GLSS 6. Child Labor Report

**Table A5.1: Definition of Variables Used in Estimations for Chapters 5 and 6**

---

**Dependent Variables**

Hours of Work: number of hours supplied by a child in a week

Works: 1 if the child worked; 0 if otherwise

School: 1 if child attended school; 0 if otherwise

## **Individual Characteristics**

Sex: 1 if child is a boy; 0 if a girl

Age: age of the child in years

Hours in Class: number of hours spent by the child in class

Apprentice: 1 if child is an apprentice; 0 if otherwise

Paid Employee: 1 if child is a paid employee; 0 if otherwise

Unpaid family workers: 1 if the child works with the family without payment; 0 if otherwise (reference group)

Non-Agric Worker: 1 if child is a non agric worker; 0 if otherwise

Agric Worker: 1 if child is an agric worker; 0 if otherwise

Domestic Worker: 1 if child is a domestic worker; 0 if otherwise

## **Parents Characteristics**

Dadchildlaborer: 1 if father was a child laborer; 0 if otherwise

Mumchildlaborer: 1 if mother was a child laborer; 0 if otherwise

Bothchildlaborer: 1 if both father and mother were child laborers; 0 if otherwise

Dadinhouse: 1 if father lives in the house; 0 if otherwise



Dadnoedu: 1 if father has no education; 0 if otherwise (reference group)

Dadbasicedu: 1 if father has only basic education; 0 if otherwise

DadSecedu: 1 if father has only secondary education; 0 if otherwise

Dadhigheredu: 1 if father has a tertiary education; 0 if otherwise

Muminhouse: 1 if mother lives in the house; 0 if otherwise

Mumnoedu: 1 if mother has no education; 0 if otherwise (reference group)

Mumbasicedu: 1 if mother has only basic education; 0 if otherwise

MumSecedu: 1 if mother has only secondary education; 0 if otherwise

Mumhigheredu: 1 if mother has a tertiary education; 0 if otherwise

### **Household Characteristics**

Householdsize: number of people living together with the child in the house

Log Income: total household income in log

Schexp: total expenditure on school

Verypoor: 1 if house hold is very poor i.e. lives below the extreme poverty line; 0 if otherwise

Poor: 1 if house hold is poor i.e. lives below the absolute poverty line; 0 if otherwise

Nonpoor: 1 if house hold is not poor i.e. lives above the absolute poverty line; 0 if otherwise (reference

group)

Noreligion: 1 if household has no religious believe; 0 if otherwise

Christians: 1 if the household members are Christians; 0 if otherwise (reference group)

Muslims: 1 if household members are Muslims; 0 if otherwise

Traditionalist: 1 if household members are traditionalist; 0 if otherwise

### **Community Characteristics**

Location: 1 if community is located in the urban area; 0 if rural

Publicsch: 1 if child attends public school; 0 if school is a private school

Coastal: 1 if community is coastal by nature; 0 if otherwise

Forest: 1 if community is forest by nature; 0 if otherwise

Savannah: 1 if community is savannah by nature; 0 if otherwise

Accra: 1 if the community is not characterized by any of the ecologies; 0 if otherwise (reference group)

Schdistance: number of hours a child spends to go to school and back

---

**Table A5.2a: Correlation Test for Independent Variables in Chapters Five and Six**

	sex	age	age2	hoursinclass	paidemployee	NonAgric	Agric
sex	1.0000						
age	0.0070	1.0000					
age2	0.0060	0.9914*	1.0000				
hoursinclass	-0.0002	0.0684*	0.0612*	1.0000			
paidemployee	0.0032	0.0244*	0.0255*	-0.0068	1.0000		
NonAgric	-0.0066	0.0150*	0.0148*	-0.0114	-0.0009	1.0000	
Agric	0.0133	0.0194*	0.0195*	-0.0823*	-0.0020	-0.0027	1.0000
DomesticNonAgric	0.0005	0.0333*	0.0350*	-0.0172*	-0.0010	-0.0014	-0.0029
Apprenticeship	0.0064	0.0251*	0.0247*	-0.0319*	-0.0010	-0.0013	-0.0027
dadCL	0.0315*	-0.0473*	-0.0464*	-0.0997*	-0.0013	0.0020	0.0522*
mumCL	0.0184*	-0.0409*	-0.0399*	-0.0695*	-0.0035	-0.0011	0.0569*
dadinhouse	0.0511*	-0.0783*	-0.0764*	-0.0325*	-0.0053	-0.0153*	0.0167*
muminhouse	0.0340*	-0.0977*	-0.0948*	0.0012	-0.0153*	-0.0263*	0.0108
logIncome	0.0052	0.0262*	0.0281*	0.0289*	0.0087	-0.0023	-0.0247*
hhsiz	0.0179*	0.0216*	0.0200*	-0.0948*	-0.0059	-0.0046	0.0451*
schexp	-0.0117	0.0454*	0.0456*	0.1088*	-0.0002	-0.0090	-0.0256*
location	-0.0291*	0.0294*	0.0308*	0.1413*	0.0048	-0.0131	-0.0536*
coastal	-0.0115	-0.0077	-0.0070	0.0716*	-0.0034	-0.0031	-0.0073
forest	-0.0080	0.0229*	0.0219*	0.1434*	0.0107	-0.0122	-0.0438*
savannah	0.0200*	-0.0307*	-0.0307*	-0.1797*	-0.0088	0.0183*	0.0569*
publicsch	0.0026	0.1101*	0.1027*	0.3099*	-0.0005	0.0103	-0.0056
Schdistance	-0.0087	0.0272*	0.0260*	0.0735*	-0.0063	-0.0098	-0.0106
verypoor	0.0308*	-0.0036	-0.0055	-0.1542*	-0.0026	0.0178*	0.0897*
poor	0.0006	-0.0044	-0.0042	-0.0439*	0.0046	-0.0113	-0.0134
nonpoor	-0.0247*	0.0066	0.0078	0.1581*	-0.0018	-0.0045	-0.0592*

**NB:** \* significant at 5%

**Table A5.2b: Correlation Test for Independent Variables Continue**

	Schdistance	verypoor	poor	nonpoor
Schdistance	1.0000			
verypoor	-0.0442*	1.0000		
poor	-0.0315*	-0.2456*	1.0000	
nonpoor	0.0613*	-0.5793*	-0.6478*	1.0000

**NB:** \* significant at 5%

**Table A5.2c: Correlation Test for Independent Variables Continue**

	DomesticNc~l	ApprenNoth~s	dadCL	mumCL	dadinhouse	muminhouse	logIncome
DomesticNc~l	1.0000						
ApprenNoth~s	-0.0014	1.0000					
dadCL	-0.0084	0.0072	1.0000				
mumCL	0.0109	-0.0021	0.5468*	1.0000			
dadinhouse	-0.0289*	-0.0079	0.4739*	0.2255*	1.0000		
muminhouse	-0.0040	-0.0251*	0.2433*	0.3653*	0.4911*	1.0000	
logIncome	-0.0048	0.0039	0.0910*	0.0510*	0.1633*	0.0263*	1.0000
hhsz	-0.0110	-0.0129	0.1846*	0.1304*	0.2222*	0.0985*	0.2517*
schexp	-0.0039	-0.0108	-0.1136*	-0.1005*	-0.0061	0.0241*	0.1019*
location	0.0029	-0.0018	-0.2319*	-0.2175*	-0.1201*	-0.0556*	0.0093
coastal	-0.0009	-0.0126	-0.0915*	-0.0623*	-0.0905*	-0.0387*	-0.0514*
forest	-0.0026	-0.0013	-0.1358*	-0.1225*	-0.1078*	-0.0571*	0.1005*
savannah	0.0080	0.0138	0.2640*	0.2276*	0.1720*	0.0822*	-0.0720*
publicsch	0.0003	-0.0038	0.0559*	0.0784*	-0.0260*	-0.0392*	-0.0315*
Schdistance	-0.0004	-0.0063	-0.0314*	-0.0168*	0.0069	0.0041	0.0247*
verypoor	0.0027	-0.0093	0.1313*	0.1260*	0.0726*	0.0610*	-0.2064*
poor	-0.0137	0.0021	0.0691*	0.0530*	0.0608*	0.0397*	-0.0418*
nonpoor	0.0094	0.0055	-0.1613*	-0.1436*	-0.1082*	-0.0813*	0.1973*

**NB:** \* significant at 5%

**Table A5.2d: Correlation Test for Independent Variables Continue**

	hhsz	schexp	location	coastal	forest	savannah	publicsch
hhsz	1.0000						
schexp	-0.1232*	1.0000					
location	-0.1977*	0.3203*	1.0000				
coastal	-0.1127*	0.0569*	0.0748*	1.0000			
forest	-0.1681*	0.0513*	0.0696*	-0.2748*	1.0000		
savannah	0.2836*	-0.2746*	-0.2898*	-0.3184*	-0.7028*	1.0000	
publicsch	0.0554*	-0.2481*	-0.2299*	-0.0473*	0.0131	0.1024*	1.0000
Schdistance	-0.0114	0.1034*	0.0437*	0.0085	0.0049	-0.0707*	0.0118
verypoor	0.2093*	-0.1799*	-0.2819*	-0.1004*	-0.2206*	0.3350*	0.0682*
poor	0.1328*	-0.1462*	-0.1537*	-0.0344*	-0.0520*	0.1229*	0.0956*
nonpoor	-0.2762*	0.2644*	0.3507*	0.1078*	0.2171*	-0.3666*	-0.1340*

**NB:** \* significant at 5%

**Table A5.3: Tradeoff between Child Schooling and Working Activities**

	Delta-method					[95% Conf. Interval]	
	dy/dx	Std. Err.	z	P> z			
works	-.0633092	.0109787	-5.77	0.000	-.084827	-.0417914	
age	.0917691	.010731	8.55	0.000	.0707368	.1128015	
age2	-.0046939	.0005714	-8.21	0.000	-.0058139	-.0035739	
sex	.0288349	.0083578	3.45	0.001	.0124538	.0452159	
dadCL	-.0778257	.0147188	-5.29	0.000	-.1066741	-.0489773	
mumCL	-.0192822	.0143156	-1.35	0.178	-.0473404	.0087759	
bothCL	.0625984	.0206798	3.03	0.002	.0220666	.1031301	
dadinhouse	.1070071	.0139121	7.69	0.000	.07974	.1342742	
muminhouse	.0746021	.0149786	4.98	0.000	.0452446	.1039597	
Dadbasicedu	.0175274	.0278204	0.63	0.529	-.0369996	.0720543	
Dadsecedu	.0849578	.0170286	4.99	0.000	.0515824	.1183332	
Dadhigeredu	.1711884	.0438278	3.91	0.000	.0852874	.2570893	
mumbasicedu	-.050413	.0283985	-1.78	0.076	-.106073	.005247	
mumsecedu	.071974	.0236343	3.05	0.002	.0256516	.1182964	
mumhigeredu	.2644733	.1248494	2.12	0.034	.0197729	.5091737	
hhsiz	-.0021779	.0013404	-1.62	0.104	-.004805	.0004491	
verypoor	-.2359712	.0124965	-18.88	0.000	-.260464	-.2114784	
poor	-.1095573	.0099985	-10.96	0.000	-.129154	-.0899606	
Noreligion	-.2012656	.0234704	-8.58	0.000	-.2472667	-.1552644	
Moslems	-.0858742	.0099139	-8.66	0.000	-.1053051	-.0664433	
location	.199873	.0094889	21.06	0.000	.1812752	.2184709	
coastal	.0434766	.0218217	1.99	0.046	.000707	.0862463	
forest	.0557698	.0197528	2.82	0.005	.0170551	.0944845	
savannah	-.0707927	.0199409	-3.55	0.000	-.1098761	-.0317093	

**NB:** Dependent Variable is whether a child attends school or not

**Table A6.1: Results for Selection Equation for the Pooled Sample**

<b>Independent Variables</b>	<b>Coefficients</b>	<b>Z</b>	<b>P&gt;  Z  </b>
<b>Individual Characteristics</b>			
<b>Sex</b>	0.0544	2.51	0.012**
<b>Age</b>	0.3922	12.47	0.000***
<b>Age2</b>	-0.0121	-7.63	0.000***
<b>Inschool</b>	-0.4233	-9.69	0.000***
<b>Parents Characteristics</b>			
<b>Dadchildlaborer</b>	0.4232	13.47	0.000***
<b>Mumchildlaborer</b>	0.5801	20.14	0.000***
<b>Dadinhouse</b>	-0.2753	-7.23	0.000***
<b>Dadbasicedu</b>	0.1213	1.71	0.088*
<b>DadSecedu</b>	-0.0928	-2.17	0.030**
<b>Dadhigheredu</b>	-0.3953	-3.69	0.000***
<b>Muminhouse</b>	-0.3669	-9.51	0.000***

<b>Mumbasicedu</b>	-0.1494	-2.05	0.040**
<b>MumSecedu</b>	-0.1066	-1.82	0.069**
<b>Mumhigheredu</b>	-0.3829	-1.54	0.123

**Household Characteristics**

<b>Log Income</b>	0.06234	6.79	0.000***
<b>Householdsize</b>	0.0035	1.01	0.312

**Community Characteristics**

<b>Location</b>	-0.4365	-15.63	0.000***
<b>Publicsch</b>	0.3277	10.24	0.000***
<b>Coastal</b>	-0.0636	-0.80	0.423
<b>Forest</b>	0.5109	7.22	0.000***
<b>Savannah</b>	0.4790	6.58	0.000***

---

Number of observation: 19,522

NB: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

**Table A6.2: Selection Equation for Separate Gender**

Variables	Boys Only		Girls Only	
	Coefficient	P> Z	Coefficient	P> Z
<b>Individual Characteristics</b>				
Age	0.3289	0.000***	0.4603	0.000***
Age Squared	-0.0089	0.000***	-0.0156	0.000***
Inschool	-0.5288	0.000***	-0.3023	0.000***
<b>Parents Characteristics</b>				
Dadchildlaborer	0.4047	0.000***	0.4459	0.000***
Mumchildlaborer	0.5698	0.000***	0.5966	0.000***
Dadinhouse	-0.2340	0.000***	-0.3238	0.000***
Muminhouse	-0.3515	0.000***	-0.3828	0.000***
Dadbasicedu	0.1102	0.280	0.1351	0.173
DadSecedu	-0.1529	0.013**	-0.0389	0.514
Dadhigheredu	-0.4812	0.004***	-0.3453	0.014***
Mumbasicedu	-0.2303	0.027**	-0.0757	0.459



<b>MumSecedu</b>	-0.0480	0.567	-0.1639	0.046**
<b>Mumhigheredu</b>	-0.4616	0.172	-0.1898	0.615

**Household Characteristics**

<b>Log Income</b>	0.0382	0.003***	0.0874	0.000***
<b>Householdsize</b>	0.0036	0.469	0.0038	0.445

**Community Characteristics**

<b>location</b>	-0.4583	0.000***	-0.4131	0.000***
<b>Publicsch</b>	0.3239	0.000***	0.3346	0.000***
<b>Coastal</b>	-0.0119	0.920	-0.101	0.351
<b>Forest</b>	0.5498	0.000***	0.4894	0.000***
<b>Savannah</b>	0.5157	0.000***	0.4552	0.000***

---

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

---

*Source:* Estimated by Author from GLSS 6 (2012/13)

**Table A7.1: Full Equation for Impact of Child Labor on Labor Market Outcomes. Pooled Sample**

Independent Variables	Adults Wage		Adults Employment		Adults Hours of Work		LFPR	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	<b>Chidlabor</b>	-.002**	-.005***	-.344***	-.495***	-.069***	-.143***	-.004
<b>AdultAge</b>	-.032***	-.032***	.259**	.308***	-.203***	-.182**	.123**	.131***
<b>AdultEdu</b>	.262***	.249***	1.542***	.802	.324	-.044	1.857***	1.632***
<b>Location</b>	.204***	.169***	3.944***	2.364**	6.409***	5.583***	34.36***	33.83***
<b>Coastal</b>	.153	.135	5.700***	4.637	-8.97***	-9.51***	-2.93***	-3.27***
<b>Forest</b>	.063	.075	-.053	-.363	-9.58***	-9.52***	-3.46***	-3.37***
<b>Savannah</b>	-.073	-.053	5.024***	6.07***	-8.66***	-8.16***	-4.47***	-4.17***

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

Source: Estimated by Author from GLSS 6 (2012/13)

**Table A7.2: Full Equation for Impact of Child Labor on Labor Market Outcomes. Urban Only**

Independent Variables	Adults Wage		Adults Employment		Adults Hours of Work		LFPR	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	<b>Chidlabor</b>	-.001	-.009*	-.276***	-.621***	-.131***	-.222***	-.001
<b>AdultAge</b>	-.022***	-.023***	-.088	-.053	-.218*	-.211*	.029	.024
<b>AdultEdu</b>	.269***	.247***	.614	.629	.475	-.140	2.120***	1.651***
<b>Coastal</b>	.095	.077	4.555***	3.469*	-8.48***	-8.77***	-2.74***	-3.13***
<b>Forest</b>	.070	.097	-.490	1.758	-8.22***	-7.95***	-2.89***	-2.45***
<b>Savannah</b>	-.033	.007	.567	2.797	-10.166	-9.57***	-5.12***	-4.27***

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

Source: Estimated by Author from GLSS 6 (2012/13)

**Table A7.3: Full Equation for Impact of Child Labor on Labor Market Outcomes. Rural Only**

Independent Variables	Adults Wage		Adults Employment		Adults Hours of Work		LFPR	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	<b>Chidlabor</b>	-.002	-.003	-.363***	-.455***	-.052***	-.124***	-.007
<b>AdultAge</b>	-.040***	-.039***	.541***	.579***	-.188*	-.158	.193***	.200***
<b>AdultEdu</b>	.254***	.245***	3.132***	2.522***	-.043	-.518	1.527***	1.407***
<b>Coastal</b>	.312***	.288**	-.557***	-2.148	-1.158	-2.397*	1.201**	.891
<b>Forest</b>	.157	.154*	-8.26***	-8.64***	-2.22***	-2.52***	.394	.320

NB: \*\*\* significant at 1%      \*\* significant at 5%      \* significant at 10%

Source: Estimated by Author from GLSS 6 (2012/13)

## QUESTIONNAIRE USED BY THE GLSS6 SURVEY

1. Respondent Name:
2. ID Code:
3. REGION:
4. DISTRICT:
5. E.A. NUMBER:
6. HOUSEHOLD ID:
7. ECOLOGICAL ZONE:
8. SEX
9. What is the relationship of (NAME) to head of household?
10. What is (NAME's) date of birth?
11. How old is (NAME)?
12. What is (NAME'S) religious denomination?
13. In what region/country was (NAME) born?
14. Does (NAME'S) father live in this household?
15. I.D. of biological father
16. What is/was highest educational level attained by (NAME'S) father?
17. Does (NAME'S) mother live in this household?
18. I.D. of biological mother
19. What is/was highest educational level attained by (NAME'S) mother?
20. Has (NAME) ever attended school?
21. What is/was the main reason why (NAME) has never attended school?

22. What was the highest educational qualification attained?
23. Did (NAME) attend school/college at any time during the past 12 months?
24. Is (NAME) still in school?
25. Is the school (Name) attending Public or Private?
26. How much time does (NAME) spend going to and from school daily?
27. How many hours of class did (NAME) attend last week?
28. I want to ask you about the educational expenses for (NAME) during the past 12 months?  
(DO NOT INCLUDE BURSARY AND SCHOLARSHIP) How much was spent on the following
- i. School fees and registration fees?
  - ii. Contributions to parent/teacher associations (PTA)?
  - iii. Uniforms and sports clothes?
  - iv. Books and school supplies?
  - v. Transportation to and from school?
  - vi. Food, board & lodging at school?
  - vii. Expenses on extra classes?
29. Did (NAME) do any work for pay, profit, family gain or did (NAME) produce anything for barter or home use during the last 7 days even if it was for only one hour?
30. During the last 7 days, how many jobs did (NAME) do/have altogether?
31. In total, how many hours did (NAME) work in all these jobs over the last 7 days?
32. During the last 7 days when did (NAME) usually carry out these activities?

33. At what age did (NAME) started to work for the first time in his/her life?(As regular or casual employee, self employed, employer or unpaid family worker)

34. Has (NAME) received or will (NAME) receive money for this work?

35. What is the amount (incl. any bonuses, commissions, allowances or tips) received?

AMOUNT GH¢..... TIME UNIT.....

36. What was the status of (NAME) in this job?

## REFERENCES

Afenyadu, D (2010), *Child Labor in Fisheries and Aquaculture, a Ghanaian Perspective*. A Paper Presented to the FAO Workshop on Child Labor in Fisheries and Aquaculture in Cooperation with ILO FAO Headquarters, Rome, April 14 - 16.

Akabayashi, H., and Psacharopoulos, G. (1999), "The Trade-off between Child Labor and Human Capital: A Tanzanian Case," *Journal of Development Studies*, Vol. 35, pp. 120-140.

Allison, P. D. (1999), *Logistic Regression Using the SAS System: Theory and Application*. Cary, NC: SAS Institute Inc.

Altonji, J.G. and Card, D. (1991), "The Effects of Immigration on the Labor Market Outcomes of Less-skilled Natives." In: John M. Abowd and Richard B. Freeman (eds.), *The Immigration, Trade, and the Labor Market*, Chicago: The University of Chicago Press, pp. 201-234.

Amin S., Quayes, S.M. and Rives, J.M. (2004), "Poverty and other Determinants of Child Labor in Bangladesh", *Southern Economic Journal*, Vol. 70, pp. 876-892.

Anker, R., Barge, S., Rajagopal S. and Joseph M.P. (eds.) (1998), *Economics of Child Labor in Hazardous Industries of India*. Centre for Operations Research and Training, Baroda.

Ashagrie, K. (1993), "Statistics on Child Labor". *Bulletin of Labor Statistics*, Vol. 3. Geneva: International Labor Organization.

Baland, J.M. and Robinson, J.A. (2000), "Is Child Labor Inefficient" *Journal of Political Economy*, Vol. 108, pp. 663-679.



Basu, K., (1999), "Child Labor: Cause, Consequences and Cure, with Remarks on International Labor Standards", *Journal of Economic Literature*, Vol. 37, pp. 1083-1119.

Basu, K. and Van, P.H. (1998), "The Economics of Child Labor" *American Economic Review*, Vol. 88, pp. 412-427.

Bhalotra, S. (2003), "Is Child Work Necessary?" Department of Economics, University of Bristol. Discussion Paper No. 03/554

Bhalotra, S.R. and Heady, C.J. (2005), "Determinants of Child Farm Labor in Ghana and Pakistan", Mimeograph, University of Cambridge.

Bhukuth, A., Ballet, J. (2006) "Is Child Labor a Substitute for Adult Labor?: A Case Study of Brick Kiln Workers in Tamil Nadu, India", *International Journal of Social Economics*, Vol. 33, pp. 594 - 600

Canagarajah S. and Coulombe, H. (1997), "Child Labor and Schooling in Ghana". Part of the series undertaken as part of a World Bank Economic and Sector Work (ESW) on Ghana: Labor Markets and Poverty.

Canagarajah, S. and Nielsen H.S. (1999), "Child Labor and Schooling in Africa: A Comparative Study". SP Discussion Paper No. 9916 (The World Bank, Labor Market, Pensions, Social Assistance).

Chao, S. and Alper O. (1998), "Assessing Basic Education in Ghana", *Studies in Human Development*, No. 1, *Human Development III, Africa Region*, World Bank, Washington, D.C.

Christofides, L., Stengos, T., and Swidinsky, R. (1997), “On the Calculation of Marginal Effects in the Bivariate Probit Model”, *Economics Letters*, Vol. 54, pp. 203-208.

Cockburn, J. (2000), “The Determinant of Child Labor Supply in Rural Ethiopia”, Nuffield College and Centre for the Study of African Economics (CSAE), Oxford University, Oxford.

Doran, K. B. (2012), “How Does Child Labor Affect the Demand for Adult Labor? Evidence from Rural Mexico” *Journal of Human Resources*, Vol. 48, pp. 702-735.

Diamond, C. and Fayed, T. (1998), “Evidence on Substitutability of Adult and Child Labor”, *Journal of Development Studies*, Vol. 34, pp. 62-70.

Dumas C. (2007), “Why do Parents Make their Children Work? A Test of the Poverty Hypothesis in Rural Areas of Burkina Faso”. *Oxford Economic Papers*, Vol. 59, pp. 301–329.

Edmonds, E. (2003), “Child Labor in South Asia”, Working Paper No. 5 (OECD Social, Employment and Migration).

Edmonds, E. (2008), “Child Labor.” In: T. Paul Schultz, and John Strauss (eds.), *Handbook of Development Economics*, Vol. 4, North Holland: Amsterdam, pp. 3607-3709.

Emerson, P. and Souza, A.P. (2003), “Is There a Child Labor Trap? Intergenerational Persistence of Child Labor in Brazil”, *Economic Development and Cultural Change*, Vol. 51, pp. 3-10.

Galli R. (2001), “The Economic Impact of Child Labor”, *The International Institute for Labor Studies, Discussion Paper Series*, DP 128.

Ghana Statistical Service (2003), *Ghana Child Labor Survey*, Ghana Statistical Service.

Ghana Statistical Service (2014), *Child Labor Report*, Ghana Statistical Service.

Grootaert, C. (1998), "Child Labor in Côte d'Ivoire: Incidence and Determinants", Policy Research Working Paper, No. 1905, World Bank: Washington DC.

Gunnarsson V., Orazem P. F and Sánchez M.A. (2006), "Child Labor and School Achievement in Latin America" *The World Bank Economic Review* 20, pp. 31-54.

Haile, G. and Haile B. (2012), "Child Labor and Child Schooling in Rural Ethiopia: Nature and Trade-off", *Education Economics*, Vol. 20, pp. 365-385.

Heckman, J. J. (1980), "Sample Selection Bias as a Specification Error", *Econometrica*, Vol. 47, pp. 153-162.

Heady, C. (2003). "What is the Effect of Child Labor on Learning Achievement? Evidence from Ghana." International Programme on the Elimination of Child Labor (2007), Overview of ILO-IPEC projects in Ghana. Meeting of the National Steering Committee, January (unpublished paper).

International Labor Organization (1973). *C138 The Minimum Age for Admission to Employment and Work*, ILO: Geneva.

International Labor Organization (1999a). *C182 Worst Forms of Child Labor Convention*, ILO: Geneva.

International Labor Organization (1999b). *R190 Worst Forms of Child Labor Recommendation*, ILO: Geneva.

ILO-IPEC (2004), “Support for the Implementation of Time bound Measures for the Elimination of the Worst Forms of Child Labor in Ghana”, Project Document, Geneva.

ILO-IPEC (2007), “Girls in Mining: Research Findings from Ghana, Niger, Peru, and the United Republic of Tanzania”, available at

<http://www.ilo.org/ipecinfo/product/viewProduct.do?productId=5304>.

International Labor Organization (2002), “Every Child Counts: New Global Estimates on Child Labor”, ILO: Geneva.

Jafarey, S. and Lahiri, S. (2000a), “Child Labor: Theory, Policy and Evidence”. Accessed 19/05/15 <http://www.swan.ac.uk/economics/dpapers/2000/wp00-09.pdf>

Jafarey, S. and Lahiri, S. (2000b), “Will Trade Sanctions Reduce Child Labor? The Role of Credit Markets, Discussion Paper No. 500, Department of Economics, University of Essex.

Jafarey, S. and Lahiri, S. (2000c), “Food for Education and Funds for Education Quality: Policy Options to Reduce Child Labor”, Discussion Paper No. 00-03, Department of Economics, University of Wales, Swansea.

Kufogbe, S., Awadey, C. and Appenteng B. (2005), “Child Labor in Fishing in the Gomoa and Awutu-Efutu-Senya Districts, Ghana”, A Baseline Survey Report; Prepared for International Needs Ghana/ILO/IPEC: Accra.

Levison, D., Anker, R., Ashraf, S. and Barge, S (1996), “Is Child Labor Really Necessary in India's Carpet Industry?” Labor Market Paper No. 15. ILO: Geneva.

Levy, V. (1985), “Cropping Pattern, Mechanization, Child Labor, and Fertility Behavior in a Farming Economy: Rural Egypt.” *Economic Development and Cultural Change*, Vol. 33, pp. 777- 791.

Liao, T. F. (1994), *Interpreting Probability Models: Logit, Probit, and Other Generalized Linear Models*. Sage Publications: Thousand Oaks, CA.

Maddala, G. S. (1988), *Introduction to Econometrics*. New York: Macmillan.

Mensa-Bonsu, H.J.A. and Dowuona-Hammond, C. (1996), "The Child within the Ghanaian Family". In: E. Ardayfio-Schandorf (ed.), *The Changing Family in Ghana*, Ghana Universities Press: Accra, pp. 5–20.

Montgomery, M., Kouame, A. and Oliver, R. (1995), "The Tradeoff between Number of Children and Child Schooling: Evidence from Cote d'Ivoire and Ghana." LSMS Working Paper No. 112, World Bank: Washington D.C.

Nielsen, H. S. (1998), "Child Labor and School Attendance: Two Joint Decisions", CLS WP 98-15. Centre for Labor Market and Social Research: Aarhus.

Patrinos, H. and Psacharopoulos, G. (1997), "Family Size, Schooling and Child Labor in Peru: An Empirical Analysis." *Journal of Population Economics*, Vol. 10, pp. 387-405.

Psacharopoulos, G. (1997). "Child Labor versus Educational Attainment: Some Evidence from Latin America." *Journal of Population Economics*, Vol.10, pp. 337-386.

Ranjan, P., (1999), "Credit Constraints and the Phenomenon of Child Labor", Working Paper 98-99, University of California: Irvine.

Ravallion, M. and Wodon Q. (2000), "Does Child Labor Displace Schooling? Evidence on Behavioral Responses to an Enrollment Subsidy." World Bank: Washington DC.

Ray, R. (2000a). "Child Labor, Child Schooling, and their Interaction with Adult Labor: Empirical Evidence for Peru and Pakistan". *The World Bank Economic Review*, Vol. 14, pp. 347-367.

Ray, R. (2000b). "The Determinants of Child Labor and Child Schooling in Ghana". Discussion Paper No. 2000-5, Tasmania University, Department of Economics.

Rosati, F. C. and Rossi. M. (2001). "Children's Working Hours, School Enrolment and Human Capital Accumulation: Evidence Form Pakistan and Nicaragua." *Understanding Children's Work*. UNICEF Innocenti Research Centre.

Rosenzweig, M. R. and Evenson R. (1977), "Fertility, Schooling and the Economic Contribution of Children in Rural India: An Econometric Analysis." *Econometrica*, Vol. 45, pp. 1065-1079.

Sackey, E.T. (2013), "Children Balancing Work with School: A Sociocultural Conception of Child Work and Schooling in Cape Coast Metropolitan Area, Ghana." Master's Thesis in Psychology, Norwegian University of Science and Technology, Trondheim.

Sasaki, M. and Temesgen T. (1999), "Children in Different Activities: Child Labor and Schooling in Peru", World Bank: Washington, D.C.

Swinnerton, K. A. (1996) "Minimum Wages in an Equilibrium Search Model with Diminishing Returns to Labor in Production," *Journal of Labor Economics*, Vol. 14, pp. 340-355.

The Fourth Republican Constitution of Ghana. (1992). Accra.

The Children's Act (1998, Act 560). Ghana Parliament House Accra.

United States Department of Labor (2007), “Findings on the Worst Forms of Child Labor – Ghana”, available at: <http://www.refworld.org/docid/48caa472c.html> [accessed 1 August 2014].

Wahba, J. (2000), “Do Market Wages Influence Child Labor and Child Schooling?”, Discussion Paper No. 0024, The World Bank, Labor Markets, Pensions, Social Assistance: Washington DC.

Wahba, J. (2001), “Child Labor and Poverty Transmission: No Room for Dreams”, Department of Economics, University of Southampton.

Zdunnek, G., Dinkelaker, D., Kalla, B., Matthias, G., Szrama, R. and Wenz, K. (2008), “Child Labor and Children’s Economic Activities in Agriculture in Ghana”, *SLE Publication Series – S233*.

## **AFFIRMATION**

I hereby affirm that I have completed my doctoral thesis entitled, "Child Labor in Ghana: A Multidimensional Analysis " entirely on my own, and that I have specially marked all of the quotes I have used from other authors as well as those passages in my work that are extremely close to the thoughts presented by other authors, and listed the sources in accordance with the regulations I have been given.

November, 2016

Victoria Nyarkoah Sam