THE IMPACT OF TUITION-FREE POLICIES ON SCHOOLING AND CHILD LABOUR INCIDENCE IN GHANA

OPHELIA BONSU
Bachelor of Arts, University of Ghana, 2017
Master of Science, University of Sussex, 2019

A thesis submitted in partial fulfilment of the requirements for the degree of

MASTER OF ARTS

in

ECONOMICS

Department of Economics
University of Lethbridge
LETHBRIDGE, ALBERTA, CANADA

© Ophelia Bonsu, 2021

THE IMPACT OF TUITION-FREE POLICIES ON SCHOOLING AND CHILD LABOUR INCIDENCE IN GHANA

OPHELIA BONSU

Date of Defence: April 26, 2021

Dr. D. Rockerbie Thesis Supervisor	Professor	Ph.D.
Dr. R. Mueller Thesis Examination Committee Member	Professor	Ph.D.
Dr. K. Tran Thesis Examination Committee Member	Professor	Ph.D.
Dr. P. Ghazalian Chair, Thesis Examination Committee	Associate Professor	Ph.D.

DEDICATION

To my dearest mother for the many sacrifices she has made and keeps making for me, her

love, advice and prayers.

ABSTRACT

Globally, most countries drew closer to the United Nation's Millennium Development Goal 2 (i.e., achieve universal primary education by 2015). The approach most Sub-Saharan African countries used was to abolish tuitions at the primary school level. Various literature has shown a significant negative correlation between schooling and child labour. Therefore, this study sought to find out if the tuition-free basic education policy in Ghana served to promote schooling and discourage child labour. GLSS 3 and GLSS 4 are the datasets used. The bivariate probit model, the likelihood ratio test and the difference-in-difference estimation method are the techniques used. After the tuition-free policy, the probability that the child would only go to school decreased, the probability that they would only work increased, but the probability that they would do both increased. Hence, some children work and do not go to school in Ghana for reasons unrelated to tuition-cost.

ACKNOWLEDGEMENT

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1: INTRODUCTION

1.1.1 Definition and History of Child Labour

Child labour is a global phenomenon. There has been growing interest in the concept (child labour) among researchers worldwide in recent years. Many works of literature have given various explanations for child labour. However, according to the International Labour Organization (ILO), child labour is the exploitation of children to engage in work that deprives them of their childhood, interferes with their schooling, and is morally, mentally, and physically dangerous for the child. Child labour is morally and ethically unacceptable because various forms of labour market activities, though trivial (as some may be), may negatively impact the child.

Although many feel it is the sole responsibility of parents to provide for their children until they are of legal age (usually 18 years), children worldwide have since pre-historical times engaged in all forms of economic activities. Children have been exploited in diverse ways at different periods of time. Until 1989, when the United Nations Children's Fund (UNICEF) signed the Convention on the Rights of the Children, children were not seen as humans with rights other than being economic assets to their parents. Child labour was an essential part of pre-industrial economies. During those times, children as young as 13 years were considered adults and partook in the same economic activities as adults (Diamond, 2012). This happened over ten thousand years ago with the rise in agricultural invention, which set a whirlwind to improve people's living standards. With agriculture, people could produce more food and therefore have more children. Therefore, children had to work on the farm to support their families (Gray, 2008). In the 1800s, children as young as 14 years worked in agriculture, mining, factories, and on the streets as vendors as it was an accepted part of economic and

1

industrial lives. Children (especially those from low-income homes) were expected to contribute to their families' income, and sometimes these children worked in dangerous jobs and as much as 12-hour shifts. In 1910, it was estimated that over two million children under age fifteen were working in industrial jobs in the United States (National Archives, 2017). Hence, child labour did not only become an issue in recent times but has been rooted in human history.

Child labour exists everywhere, but evidence from the ILO and various literature have proved that the prevalence of child labour to be highest in developing countries, especially in Africa. African countries such as Libya, Nigeria, Mali, and Ghana have been involved in the slave trade and child trafficking. Research has surfaced about the causes of child labour been due to past and recent occurrences. Some literature reports that the reason for the high records of child labour activities in Africa is past slave trades. A study by Sackett (2007) on forced child labour and cocoa production in West Africa reveals that the Portuguese involvement in the 1800s in the slave trade in West African countries impacts the high rates of child labour in cocoa production in such countries today. Most of these slaves were forced to work for their "masters" on cocoa farms, and other plantations and as such, even after the abolishment of slavery, hundreds of thousands of children are employed to work on these farms, that is why, until today, cocoa is one of the highest revenue generated crops in West Africa.

1.1.2 Types of Child Labour

Some of the types of work children may be involved in may include employment in shops and mines, as agricultural workers, as construction workers as scavengers, street hawkers, or domestic workers (Marcus and Harper, 1997). Another form of child labour overlooked most

times by society is when older children are made to stay away from school to cater for their younger siblings to allow the parents to work and fend for the family. According to the ILO, not all forms of jobs done by children are unacceptable; hence not all children's economic activity can be classified as child labour. Exceptions include light work that does not threaten their health and safety and hinder their education or vocational orientation, supervised training and family duties. Some of the activities include helping parents around with house chores, working to supplement the family income during school holidays, and working outside school hours to obtain pocket money. These activities contribute to the family's welfare and provide children with specific experiences and skills beneficial for their adult life and productivity.

In Ghana, it is illegal for a child under 18 to be involved in some labour market activities. A Human Trafficking Management Board (HTMB) was formed to help check issues of child labour. However, this was inactive in 2013, and hence it was constituted in 2014. There were moderate advancements made by this board in collaboration with the government to eliminate all forms of worst labour among minors in the country. Also, the Ghana Police Service's Anti Human Trafficking Unit (AHTU) have trained more investigators to curb child labour incidence in the country. Regardless of these and other Ghanaian government efforts, children in the country continue to partake in various economic activities. These economic activities include, among others, farming, fishing, street hawking, *galamsey* (illegal small-scale gold mining) and porterage business (the carrying of heavy loads in the markets to support people who come to the market to make purchases).

One factor that distinguishes Ghana from other African countries, such as those in the North, is its soil fertility. The soil in Ghana supports various products such as yams, vegetables, cereal, cocoa, etc. Cocoa is a major cash crop and source of foreign exchange in Ghana. Over 64 percent of the Ghanaian population is involved in agriculture (Sharife, 2011), mainly

farming, and the children of these farmers (mostly those in the rural areas) are often their primary source of labour. Approximately 63 percent of economically active children in Ghana are engaged in agriculture. An 11 – day observation on children engaged in cocoa production in the Sefwi Wiawso District of the Western Region of Ghana revealed that children of all ages were involved in farming. Children younger than 17 years were also involved in all sorts of activities regardless of the degree of hazard associated with such an activity. Some of these activities included thinning and weeding, pesticide application, pods opening, etc., using equipment such as chain saws, cutlasses, and pesticide backpack sprays. These children are untrained in the use of these types of equipment, and hence such activities expose them to body pains, bleeding, coughing, burning eyes and skin, etc.

In the coastal areas of southern Ghana, in areas such as Cape Coast and the Volta Region, the main type of work children do, especially among boys, is fishing. Approximately 21,000 children are working as slaves on fishing boats on and around Ghana's Lake Volta. The International Justice Mission's baseline study on the Volta lake estimates that 56 percent of these children were trafficked to the lake, working as slaves and not as apprentices. These children could be sold for as low as GH¢50 (that is approximately US $9) due to poverty. Results from the International Justice Mission's survey revealed that apart from poverty, children are engaged in fishing because children are easier to control as compared to adults, and they do various tasks that adults will be reluctant to do (Joy News, 2017). Lake Volta is full of plants and tree stumps that interfere with fishing. As a result, some of these children's duties are to dive into the lake to fix tangled nets and those who do not know how to swim usually die in the process (Human Movie Team, 2018). Also, because these children are bought cheaply, they are often abused and molested. Their slave masters have little or no respect for their dignity. An interview of 17 children in Ketu South and Keta in the Volta region also revealed that children engaged in fishing do so to support their families. Although

working conditions for these children differ, and most of these children go to school, quite a number of them work under circumstances that violate the Ghanaian legislation. This is because these activities either deprive children of their education or because going to sea is a general hazard. On days that the catch at sea is enormous, some of those enrolled in school do not go or are late for classes. Abuse and violence against these children are not uncommon. The most paramount hazard to these children is drowning due to stormy weather, heavy rain, and the wind, which could make them fall into the sea or cause the boat to capsize (Gabriele et al., 2008).

In recent years, street hawking has become one of the activities some Ghanaians engage in to earn a living. People who are into such an activity carry goods in hand or on their heads and sell to passengers who are onboard buses and other vehicles that have come to a halt in traffic, certain commercial areas, and some parts of highways when buses stop to allow passengers to use washrooms and buy food. It is not uncommon to see children below 17 years engaged in this type of activity. These children sell items such as sachets of water, snacks, fast foods, and electrical appliances on trays or baskets they balance on their heads. There is a high incidence of child hawking in Ghana because children are sent to the streets to sell to supplement the incomes of families who, in most cases, migrated from the rural areas to the urban centers for better standards of living but could not cope with the high cost of living (Ayele, 2019). Hawking on the streets has huge implications on the emotional and physical wellbeing of children. Street hawking exposes children in Ghana to prostitution, malnourishment, vehicle accidents as well as physical exhaustion.

Galamsey is derived from the phrase "gather them and sell" (Owusu-Nimo et al., 2018) and it is a Ghanaian term for illegal small-scale gold mining in Ghana. Individuals who do this kind of business are known as *galamseyers* and they undertake their mining activities by digging

pits and tunnels by hand. *Galamsey* activities are carried out in most mining areas across the country. The key mining areas in Ghana are all located in the south, which are in areas like Obuasi, Tarkwa, and Accra. The practice can either be alluvial/placer, open-pit, mill house, surface operation, underground and selection or pilfering mining. This type of business is lucrative and has attracted a large labor force, including children. *Galamsey* is generally detrimental to the individual involved, the environment, and the country. Activities of *galamsey* operators destroy farmlands, water bodies, etc. Those involved in the underground types of *galamsey* lose their lives when the pits cave in on them. Although *galamsey* is hazardous, it is not uncommon to see children involved in such an activity in Ghana. A study on children engaged in illegal gold mining activities in Atwima Mponua District in the Ashanti region revealed that children spent most of their time and energy on mining than focusing on what is taught in class (Azumah and Onzaberigu, 2018). Children who are expected to be in school, work in *galamsey* pits, which can cave in on humans inside.

Over a decade now, southern Ghana has experienced a massive influx of people from Northern Ghana and neighboring countries such as Burkina Faso and Togo (Opare 2003). This is because, most of the economic activities in Ghana take place in the south, in cities such Kumasi, Accra and Takoradi and these people migrate in search of greener pastures. Amongst the people that migrate each day are children between the ages of 10 and 17 years. The most common jobs amongst the boys who migrate to the south is to serve as house helps or as truck pushers. Some of the girls are into porterage jobs (the carrying of loads on the head) in the markets and this activity is locally referred to as "*kayayei*". The rest engage in informal petty trades, domestic works, and other menial jobs (Alessandra, 2016). The reason for this type of migration varies for each individual. While some do so to willingly to escape early pre-arranged marriages and the severe lack of jobs in the north, others are forced by their families to go and help increase family earnings. Even though the reasons differ, the root cause of the

north to south migration in Ghana is the same. Individuals who migrate are at the center of a cycle of poverty from a region known for poor education and infrastructure and infertile land. Though these children migrate because of the belief that life is better in the south, they face much of the worst that urban life has to offer.

Being a truck pusher, house help or a *kayayei* is very challenging and sometimes very harmful. Local people in the south exploit these girls by using them for their cheap labour and also stigmatize them (Brivio, 2016). Some of these children have no places to sleep and so sleep at the unhygienic marketplaces. Both the boys and the girls are as a result exposed to mosquito bites and hence deadly malaria, while the girls can end up been raped. Because of this, most *kayayei* girls have babies that they carry on their backs whiles they try to make ends meet.

A picture of young girls from northern Ghana engaged in porterage jobs in southern Ghana.

Source: Article by Greenbook Ghana Initiative (2016)

1.1.3 Consequences of Child Labour

Children who are trapped in economic activities are often kidnapped from their families, come from disadvantaged or minority groups and have no form of protection. Therefore, employers are able to exercise complete control over them and offer them no wages or, at best, give them wages far below what they would offer adults (Humanium, 2010). The consequences of child labour are staggering. Children who fall victim to child labour lack the pleasant memories of childhood and may experience extreme bodily pain, psychological problems, and even death sometimes. These children get exposed to injuries like burns and lacerations, tiredness, cuts and fractures, experience excessive nightmares and fears. Some of these children risk been trafficked, which makes the girls highly prone to sexual abuse (as some may be forced into prostitution or child pornography) and the boys to armed groups exploitation, affecting their morals and dignity. Sexual abuse frequently lands children in unwanted pregnancies, abortions, drugs and alcoholism, sexually transmitted diseases and HIV/AIDS. Often, child labour negatively affects children's schooling and results in the child missing educational qualifications and higher skills, thereby perpetuating the cycle of poverty. Lack of schooling also restricts the child's fundamental human rights and threatens their livelihood, in the long run, making them more vulnerable to exclusion and poverty (UNICEF, 2019).

Apart from child labour's adverse effects on the child, it also poses severe economic and social challenges for most countries, especially developing countries. Child labour poses undesirable long-term effects on human capital development, which has proven to be an engine for growth (Ahmed, 2012). Forcing children to work instead of going to school produces unskilled adults in the future. Various studies, such as the study by Tamborini et al. (2015), prove that lifetime earnings increase with increases in an individual's educational level. Therefore, all things being equal, these children will make less income in the future, and this loss in incomes year

after year lowers the country's economic growth. Also, children who work in unhygienic environments and hazardous jobs become less productive because of ill health, affecting the nation's long-term health. Children are also an inexpensive form of labour, and so some manufacturers prefer instead to exploit these children other than investing in fixed capital. This, therefore, affects the countries' technological advancement and reduces large-scale production and production efficiency (Arjun, 2017). Also, poverty is high in countries where the prevalence of child labour is high because child labour affects intergenerational mobility (the chances of the present generation achieving a higher socio-economic status than the previous generation), which can, in effect, increase poverty. Therefore, every economy's future depends on the welfare of its children today, which explains the intensity of child labour and how important it is to eliminate its adverse effects on human capital development to stimulate growth in developing countries.

1.1.4 Causes of Child Labour

The ILO and other literature point out that poverty is the greatest single and the most significant force that pulls children into the labour market. This is because child labour is highly prevalent in third-world countries where poverty rates are highest. Also, poor parents are usually the ones who are unable to provide adequately for their families and make their children work to supplement the family income. Estimates from some of the literature have shown that sub-Saharan Africa's poverty rate is the largest globally. As a result, poverty has now become Sub-Saharan Africa's middle name. This coincides with the fact that the incidence of child labour in Sub-Saharan Africa is high compared to the rest of the world.

According to the ILO, other factors that can also cause child labour include some perceptions, traditions and local customs, quality of education, and family. Some people in deprived communities with high levels of illiteracy perceive that a girl's place is at home and in the kitchen and hence tend to place low or no value on the girl child's education like their male counterparts. As a result, these girls are taken out of school to either work or take care of the home. Also, some traditions expect children to follow their parents' footsteps and learn their trade at a very young age. Some traditions cause people to spend heavily on social occasions such as funerals and weddings, making those who are poor highly indebted and then rely on the income children make to pay off debts. The ILO also points out that household size negatively affects the chances of the child being involved in labour market activities. Children from larger families are more likely to be victims of child labour than those from smaller families because some of these parents do not have enough funds to support a large family.

According to the ILO and experts, the family itself is also another factor that forces children into child labour. In smaller cities and villages, some children work unpaid in family enterprises and farms. Many national laws forbid child labour but exempt the activities of children in family enterprises. However, some of these activities hinder the child's education or affect them psychologically, socially or emotionally or cause these children's ill health. In bigger cities, families faced with financial challenges and cannot cope with the high demands of city life or even provide adequate nutrition for their children may force them to work to supplement families' income.

A study in South Africa by Fabre and Pallage (2015) revealed that idiosyncratic shocks and social policies play a significant role in child labour. Some idiosyncratic shocks to employment, such as borrowing constraints, sometimes affect the household adversely, and for households to self-insure, they use all possible means. One way that households manage such difficulties is to rely on their savings, and another way is to force their children to work

in all forms of jobs. With a model assuming all decisions are taken by parents, a simple storage technology and no access to financial markets, parents choose what goods are consumed, how much is saved and what job offers are accepted by children or themselves from one period to the next. The study results revealed families or households are either forced to stick with their savings or force their children to work in times of harsh economic conditions to smooth consumption over time.

1.1.5 Some Policies and Programs for Curbing Child Labour in Africa and Ghana.

Since the 1980s, countries worldwide, including African countries, have adopted policies and programs to prevent child labour. African countries such as Kenya, Tanzania, Benin, and Senegal were among the International Programme on the Elimination of Child Labor's (IPEC) early participants. The ILO created this program in 1992 to eliminate child labour. For example, in 2000, the ILO launched a three-year project to prevent children's entry into commercial agriculture in several African countries, including Kenya, Tanzania, etc. The program aimed to take 7,500 children out of exploitative work in commercial agriculture and prevent 15,000 children who were at risk of entering such economic activity from doing so. Ghana joined the countries that were participating in this three-year ILO-IPEC in 1999 (Bhalotra, 2003).

Ghana's commitment to preventing child labour like other African countries is evident. The 1992 constitution provides a guarantee to protect children from any work that threatens their development. Also, the Children's Act, 1998 (Act 560), Criminal Code (Amendment) Act,

11

1998 (Act 554), Human Trafficking Act, 2005 (Act 694) and the Domestic Violence Act, 2007 (732) and other legal instruments have provisions for addressing various types of child labour.

In 2010, Cabinet approved the first National Plan of Action (NPA 1) to eliminate the worst forms of child labour in Ghana between 2009 and 2015. The action aimed to reduce the worst forms of child labour to the barest minimum while laying firm policy and institutional foundations to prevent all other child labour forms. Significant improvements were made with the first National Plan of Action (NPA 1). Under NPA 1, awareness was created and established for child labour as a national topical issue. The plan also provided an overlying framework for linking the various policies and institutional and legal elements to improve children's welfare.

1.2 Sustainable Development Goal (SDG) 8.7 and the Trade-off Between Schooling and working

Sustainable Development Goal (SDG) 8.7 calls on the global community to "take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers and by 2025 end child labour of all forms" (ILO, 2017).

Over the years, many nations have made significant progress towards attaining SDG 8.7, and more children are beginning to experience childhood joy. According to the international humanitarian organization save the children, between the years 2000 and 2016, the number of children in labour dropped from 246 million to 152 million, representing 38 percent reduction in child labour (Karas, 2019). For that same 16-year period, the proportions of children in hazardous labour fell by more than half. Although significant advances were made in reducing child labour, progress slowed down over time. From 2008 to 2012, there was a 47 million

reduction in child labour, but from 2012 to 2016 (4-year period), the total reduction in child labour amounted to 16 million (ILO, 2017). The reduction could, among other reasons, be due to education, the emergence of labour laws, and economic growth. Although progress is made in reducing child labour year after year, it is still widespread all over the world in both developed and developing countries. Therefore, for child labour to be eliminated by 2025 (SDG 8.7), the reduction should be faster.

Some literature has identified a significant trade-off between formal education or schooling and child labour (Ahmed, 2011; Rammohan, 2014). Because of this and some other benefits of schooling to the child, formal education became one of the fundamental human rights in the 21st century (Ekundayo, 2018). As a result, governments of most countries have put in place policies to promote school enrolment in other to reduce the proportions of children who engage in economic activities. Although governments worldwide have made advancements in eliminating various forms of child labour, some children continue to be trapped in various economic activities such as fishing and farming.

1.3.1 Definition and History of Education

Education is the act of transferring knowledge, skills, values, habits, and beliefs from person to person and from generation to generation and is generally recognized as the root of civilization and development. Education can take place in two forms that is in formal and in informal settings. Formal education is intentional and is usually carried out by trained teachers in an organized or structured way in a school, university or other higher education. This form of education is considered intentional because the learner's apparent objective is to gain knowledge, skills or competencies. Formal education is commonly divided into kindergarten or preschool, primary, secondary, and tertiary. Informal education is not carried out in an

organized or structured setting. This form of education is never intentional for the learner, and there are no set objectives. Individuals are educated informally from constant exposure to learning situations at work, home or even during leisure hours (OECD).

History shows that education all over the world was informal and that schools are very recent institutions. Over hundreds of thousands of years ago, children worldwide educated themselves through explorations and self-directed plays. In the past, humans lived as hunters and gatherers and through children's play and explorations, they learned what they needed to know in hunting and gathering to become successful adults. Later in the industry, agriculture rose, and the need for labour increased, which forced many children into child labour. As the industry progressed and became more automated, child labour declined in some parts of the world, and the idea that children should spend their childhood days in school became widespread. Schools were established and hence the start of formal education (Gray, 2008)

Like the rest of the world, the knowledge transferred from one generation to the other in Sub-Saharan Africa before colonization was informal. Hymen (1969) explains that before the colonial intervention, the education transferred was mainly agricultural knowledge and production skills in apprenticeships. This informal education focused on learning on the job and was done in the spheres of the tribal network and extended family. Younger members of the household mostly learned from older members of their household, tribe, or community. Some of the informal skills children in Sub-Saharan Africa had to learn included dancing, cooking (especially females), wine making, carving stools, the making of herbal medicine, etc. Formal education was introduced in Africa during the colonial era. The formal education that was introduced differed from the informal education that pre-existed because the former takes place in a structured environment, is non-vocational, and focuses on acquiring reading and writing skills (Frankema, 2012).

Formal education in Ghana (one of the Sub-Saharan African regions) started during the mercantile era. This took place in the Forts and Castles by the European merchants, mainly the British, Danes, and Dutch. The European merchants did this mainly because they wanted their mullato children (the ones they bore with native women) to gain employment as soldiers and administrative assistants (Pola, 2008) to propagate the gospel and improve the literacy rate of the country. According to some historians, the Gold Coast's first school started at the Portuguese's Elmina castle around 1529. After the Dutch evicted them in the 16th century, it is believed that a new school was opened in the year 1644, which ran for over 200 years (Adu-Gyamfi et al., 2016). Also, Christian missionaries who realized that they needed well-educated staff established many schools that continue to run to date in other to have an independent church in the country.

The British Government assumed colonial authority in the Gold Coast in the 18th century. By then, there had already been significant progress in the educational sector with widespread Wesleyan and Basel mission schools. By 1881, the total number of schools in the Gold Coast was 139, even though the systems used varied widely. The variations in the systems used caused the government to draw the first plan in 1882 to guide education development. In 1918, the governor for the Gold Coast, Sir. Hugh Clifford proposed some targets for the development of education in the country. These targets' focus was to educate every African child at least at the primary level, set up training colleges in every province for teachers, provide teachers with better salaries, and set up a college for royals (Ekundayo, 2018).

1.3.2 Some Benefits of Education/ Schooling

One of the significant factors that differentiate developed from developing countries is the differences in training levels, as countries with more significant proportions of educated individuals tend to experience higher and faster economic growths (Radcliffe, 2020). A country's economy becomes more productive and efficient when most of its workers are educated since they can carry out tasks that require critical thinking and/or literacy. Some pieces of literature have justified a positive relationship between education and economic growth. For instance, Lucas (1988) finds human capital as the key driver of economic growth and explains that, to a large extent, the differences in living standards across countries are a result of differences in human capital. According to Lucas (1988), the effect of human capital (general skill level) due to schooling can be internal or external. For the internal effect, he points out that the effective workforce used in production is dependent on skill level and the fraction of non-leisure hours devoted to current production. Since output is a function of effective labour, an individual's human capital accumulation influences their productivity. His argument for the external effect is a generalization of the internal effect on all workers. Lucas (1988) points out that the effective workforce used in production is determined by the level that all workers possess and the amount of non-leisure hours all workers will choose to allocate to production. Since total goods production is a function of the effective workforce, total production is affected.

Education is also directly related to many solutions to poverty in a country, such as reducing poverty, stunting, vulnerability, and income inequality (Giovetti, 2019). According to UNESCO, if all children in low-income countries were to have only basic reading skills, about 171 million of its people could escape extreme poverty, and global poverty could be halved if

all adults completed secondary school.

Investing in a child's education is also an investment in the future of families and households. Schooling positively impacts a child's future employment prospects and raises wages. Based on research carried out on genetically identical twins, Ashenfelter and Krueger (1994) find that after adjusting for measurement errors, a year increase in schooling increases wages by approximately 12% to 16%. Therefore, schooling influences the long-run poverty reduction of families as it is expected that incomes in skilled professions are higher than those in unskilled professions. According to Eastwood and Lipton (1999), better education improves nutrition and health, reduces fertility, and promotes behavioural and attitudinal changes, which are essential for poverty reduction and socio-economic upliftment.

1.3.3 Tuition-Free Basic Education in Ghana.

Ghana gained independence from British colonial rule on March 6, 1957, and ever since then, successive governments have taken the educational system through a series of reforms in search of a model that fits the expectations of citizens or the needs of the country. Most governments have also tried to promote literacy rates in the country by enacting policies to achieve universal primary education for all children regardless of race, gender, etc. Ghana's achievement in promoting access to education has been remarkable over the years. Kamran et al. (2019) report that Ghanaian children attend school at higher rates than most of their counterparts in other African countries. In 2017, over 84% of Ghanaian children were enrolled in primary school, and the gross enrolment rate for secondary school education was about 72%, and literacy rates soared from 71% to 86% in 2000 and 2010, respectively. The Ghana

Statistical Service report that from 2008 to 2019, the gross enrolment ratio in Ghana was over a 100 ranging from 100.29 in 2009 to 108.34 in 2015. The gross enrolment ratio is obtained by dividing the number of students in a given level of education regardless of age by the age group that officially corresponds to the given level of education and multiplied by 100 (UNESCO Institute of Statistics, 2021). Therefore, it can be inferred that people who were outside the officially accepted age range for primary school were also motivated to go to school.

Governments worldwide and international institutions have also come to accept that investing in a child's education is a step towards the development of economies. The national and household benefits of education or schooling discussed above and the many benefits of schooling or education not discussed could explain why the United Nations' Millennium Development Goal (MDG) 2 aimed to achieve universal primary education for all children.

Although MDG 2 did not explicitly speak to free tuitions, most Sub-Saharan Africa governments have eliminated tuitions at the primary school level over the past two decades. One of the reasons for this is these governments recognized that the primary reason children in the region stay out of school and work is a financial constraint or, more generally, poverty (Sagemueller, 2019), and hence tuitions had to be abolished to promote school attendance and reduce children's economic activity. As a result, many Sub-Saharan African countries have in the past come close to attaining MDG 2. Some of the Sub-Saharan African countries that have abolished tuitions at the primary school level include Tanzania, Malawi, and Zambia. Evidence from some of the literature has revealed dramatic increases in primary school enrolment after tuitions were abolished in primary schools in these countries (Riddell, 2003; Clark, 2015; etc.). A few other countries, such as Kenya and Uganda, went a step further and abolished tuition at the secondary school level.

Like other Sub-Saharan African countries, successive governments in Ghana also abolished tuitions at the basic school level. Not long after independence, Ghana's first prime minister, Dr. Kwame Nkrumah, initiated the 1961 Act (Act 87). Section 2 (1) of the Act states that "Every child who has attained the school-going age (six years) as determined by the Minister shall attend a course of instruction as laid down by the Minister in a school recognized for the purpose by the Minister." Section 20 (2) also states that "No fee, other than the payment for the provision of essential books or stationery of material required by pupils for use in practical work, shall be charged in respect of tuition at a public primary, middle or special school." Even though free basic education became a part of Ghana's constitution in 1961, free compulsory education at the primary and junior high school (up to grade 9) levels only started in 1995. Tuitions were then abolished at the basic school levels and have remained free ever since. Like Kenya and Uganda, the Ghanaian government went a step further and made secondary school education free in September 2017 (Martinez, 2017). The President of Ghana, Nana Addo Dankwah Akufo-Addoh, reportedly said, "There will be no admission fees, no library fees, no science center fees, no computer laboratory fees, no examination fees, and no utility fees. There will be free textbooks, free boarding, and free meals." (Mitchell, 2018). Some of the reasons why these governments took this initiative is to promote economic growth and promote school enrolment. Also, due to the inverse relationship most literature reports to exist between school attendance and child labour, the government also expects that child labour in the country will also be reduced.

1.4 Research Questions

This research project will seek to address the relationship between child labour and schooling among children in Ghana. The paper will investigate whether there is an inverse relationship

between school attendance and child labour, as most literature suggests. To do this, I will analyze the correlation coefficient between schooling and child labour by testing the hypothesis for the significance of the correlation between schooling and child work using the maximum likelihood ratio approach. The probabilities of the child going to school or working for two different periods (periods before and after the start of the tuition-free policy) will also be analyzed using various factors that other literature have pointed out to affect school attendance or child labour. Although several works have proved that enrolment in schools at the basic school level increased after tuitions were abolished, there has not been any proof that the effect was causal. Therefore, we cannot conclude that abolishing tuitions in Ghana has served to increase school attendance and hence reduce child labour incidences in the country. I will explore this question by comparing the probabilities of a child working or going to school with a method that has proven to estimate causal effects of policies, i.e., the difference-in-difference technique using data obtained before and after the start of the tuition-free policy. Because tuition-free secondary education (high school) in Ghana is recent, there is no relevant data to analyze the effect of the tuition-free secondary education policy on the probabilities that a child will go to school or work. Hence, evidence from tuition-free policies at the basic school level (primary and junior high) will be used to draw inferences about the expected impact of the recent tuition-free secondary school education on child labour incidence in the country.

1.5 Research Outline

The study has been divided into five chapters. This chapter introduced the study by providing some background knowledge of child labour, as well as the causes and the consequences of child labour. It gave some information about the major child labour activities children in

Ghana are involved in and some measures the Ghanaian government has put in place to resolve child labour incidence. Further to this, chapter two throws light on the on history of education in the world in general and in Ghana in particular. The chapter also explains some of the government of Ghana's efforts to use education to reduce child labour in the country through the abolishment of tuition-fees at the primary school level. The second chapter analyses some of the literature that has been undertaken on child labour and schooling, the relationship between the two and the effect of the cost of schooling on child labour and schooling. Chapter three describes the data used for the study, the Ghana Living Standards Survey and why GLSS 3 and GLSS 4 were specifically chosen. The chapter further introduces and provides a descriptive analysis of the variables in the data that are used for the analysis. Chapter four explains the econometric models used in analyzing and answering the research questions in detail. The various models used are estimated, and results are analyzed and compared with other literature results. The final chapter summarizes, provides some policy recommendations and concludes the study.

CHAPTER 2: LITERATURE REVIEW

The International Labour Organization's (ILO) global estimates for child labour trends from 2012 – 2016 based on data obtained from more than 70 percent of the world's population of children aged 5 – 17 years in 105 household surveys showed that 218 million children aged 5 – 17 years worldwide are in employment. Out of this number, the ILO estimated that 152 million could be considered victims of child labour, and almost half (73 million) of them are working under hazardous circumstances. According to the ILO's estimate, almost half of child labour incidences are in Africa, where the absolute number of children who are victims of child labour comprise half of the world's total or about 72.1 million child labour cases. Their estimate further indicates that one in five of all African children are in child labour, and nine percent of these children are in hazardous work, which is the highest in all the world regions. The ILO also estimates that 62.1 million (19%) child labour cases are in Asia and the Pacific, 10.7 million (14%) cases in the Americas, 5.5 million (10%) in Central Asia and Europe, and the least recorded cases were about 1.2 million (7%) in the Arab States.

The ILO's global estimate for child labour trends for 2012 – 2016 further points out that a significant proportion of children involved in labour market activities are employed in agriculture. According to their estimates, 58.6% are in agriculture, 25.4% are into services (other than domestic work), 7.2% are into industrial work, 6.9% are into domestic work, and the rest's activities are undefined. Like the rest of the world, the agricultural sector accounts for the largest share of child labour in Africa. In Africa, approximately 61.4 million children are into agriculture, accounting for 85% of all child labour. These children's agricultural activities include commercial, and subsistence farming and livestock herding, and the circumstances surrounding these activities are often hazardous. Of the remaining 15%, 11%

are in the services sector, and 4% are in the industrial sector. Most of these children work on family farms and family enterprises and not for a third-party employer.

Younger children form the largest group of child labourers, and many are in hazardous labour. Hence, the older a child gets, the less likely is it for them to work or work in dangerous circumstances. Among the 152 million global child labour estimates by the ILO for its 2012 – 2016 estimate, 48 percent were aged 5 – 11 years, 28 percent are 12 – 14-year-olds, and 24 percent are 15 – 17-year-olds. Their estimate also showed that 25 percent of children aged 5 – 11 years are in hazardous labour. The estimates also showed that boys are more at risk of being involved in child labour and hazardous labour than girls. The ILO points out that girls are relatively more likely to do domestic work that is often not classified as child labour. The estimate showed that approximately 88 million boys and 64 million girls were victims of child labour representing 58 percent and 42 percent of the total, respectively. Also, there were 17 million more girls than boys in hazardous labour (ILO, 2017). Admassie (2000) reveals, based on the ILO's 1998 estimate, that 56 percent of boys and 44 percent of girls in Africa are in child labour.

Child labour exists globally. Although child labour is most prevalent in low-income countries, it is not only a problem in low-income countries. One of the myths of child labour is that it is only prevalent in developing countries. To some extent, child labour has existed throughout history and can also be traced to Western countries. There have been several incidences of children working in hazardous work in Europe and the USA (Kweifio-Okai, 2015). For instance, during the industrial era, i.e., the 19th and early 20th centuries, children aged 5 – 14 from poorer households worked in Western countries such as England and Belgium (Cunningham and Viazzo, 1996). Some children in Europe took part in all kinds of hazardous jobs such as construction, agriculture, small factories, or on the streets, which affected their lives in one way or the other. In Europe, boys worked hazardous jobs such as in factory jobs

in high heat with furnaces that were kept fired to increase productivity. Girls were also forced into prostitution (Radfar et al. 2018). A review of research conducted over two decades of the involvement of children in economic activities in Britain revealed that by age 11, between 15 – 26 percent of children had been employed in jobs, and by age 16, between 63 – 77 percent had been employed. The Association of Farmworker Opportunity programs' estimated that there were approximately 500,000 child farmworkers in the United States, including children as young as eight years old. The Russian Federation government estimated that up to a million children might be working in the country. A study in Italy also revealed that up to 18.4 percent of children work before turning 14 or 15 years old (Backus, 2010).

According to the ILO and some literature, such as Kelly (2016) and Canagarajah and Nielsen (1999), child labour is widespread and pronounced in developing countries. The ILO's report in 1996 estimated that a total of 250 million children aged 5 – 14 years in child labour. Approximately 120 million of these children worked full time, and 24 million were below age 10. Canagarajah and Nielsen (1999) also report that in absolute terms, child labour was prevalent in Asia as the total number of child labour was approximately 150 million. However, in relative terms, child labour is widespread in Africa, specifically Sub-Saharan Africa, since the child labour force participation exceeds 30 percent in most Sub-Saharan African countries. Even within Sub-Saharan Africa, there is significant variation in child labour force participation. The ILO's 2010 estimate showed that Eastern Africa ranks top in the child labour force participation in Africa, accounting for 33.79% of the total labour force participation in the region, followed by Middle Africa, then Western Africa and finally Southern Africa, accounting for 25.28%, 21.88% and 1.73%, respectively.

Although the ILOs projection of labour force participation for children has been declining for all continents, Africa's decline rate is slower (Admassie, 2000). According to Admassie (2000), the likely cause of the high incidence of child labour in Sub-Saharan Africa could, among other things, be as a result of some prominent conditions in the region such as high poverty incidence, low educational participation, high population growth, inadequate public investment in social and economic services, growth in the proportions of female-headed households and the poorly developed agricultural sector. Bhalotra (2003) also reports that while continents like Asia and Latin America have been experiencing a decline in the incidence of child labour in the post-war era, Africa's case has been different. This is because many children become orphaned due to wars, HIV/AIDS, and famine. Some of these children are cared for by relatives, but widespread impoverishment weakens the support these children receive. Some other factors that have accounted for the slower decline of the child labour rate in Africa are slow economic growth and poor governance. The ILO points out that there can be a surge in the number of child labourers in Africa due to worsened living standards, increases in the number of impoverished people and poor economic growth levels experienced by some countries in the continent.

In 1995, the ILO reported that approximately 25 percent of children aged between 5 and 14 were economically active in Ghana. In 2003, evidence from the Ghana Child Labour Survey (GCLS 2003) showed that, out of the population of 6.36 million children between the ages of 5 and 17, 2.47 million were economically active and classified about 45% of these economic activities as child labour. The World Bank also reported that from 2006 to 2012, child labour reduced from 48.9% to 28.78% for Ghanaian children aged between 7 and 14. In 2012, the ILO reported that over 240,000 children in Ghana work in hazardous labour (ILO report, 2012 – 2013). Mull and Kirkhorn (2005) reported based on a Child Labour Survey carried out by the Ghana Statistical Service in 2003 that, 21.7% of Ghana's children are victims of child

labour and that the most significant proportion of working children aged 5 – 17 in Ghana are in agriculture, which accounts for 73.6% of the entire child labour force. According to the authors, nearly 32% of working children in Ghana had experienced work injury or illness. Also, in a study of 4,080 children aged 7 – 14 years in Ghana using the Ghana Living Standard Survey waves 2 and 3 (GLSS 2 and 3), Bhalotra (2003) finds that for children aged 7 – 14 years, the average hours of work on the farm per week is about 15.5 hours for both boys and girls which signifies that children work on the farm part-time. Bhalotra (2003) also reports that almost all boys and virtually half of the girls who work in Ghana simultaneously go to school.

Below is a chart summarizing the incidence of child labour amongst children aged between 5 and 17 in Ghana as of 2014. From the chart, we find that in 2014, approximately 21.8% of children aged 5 – 17 in Ghana were in child labour and 14.2% of these activities were hazardous.

Population of children 5 – 17 years old
8,697,602

Working Children
28.5% (2,476,177

Children not working
71.5% (6,221,425)

In Child Labour
21.8% (1,892,553)

In other Child Labour
7.6% (661,267)
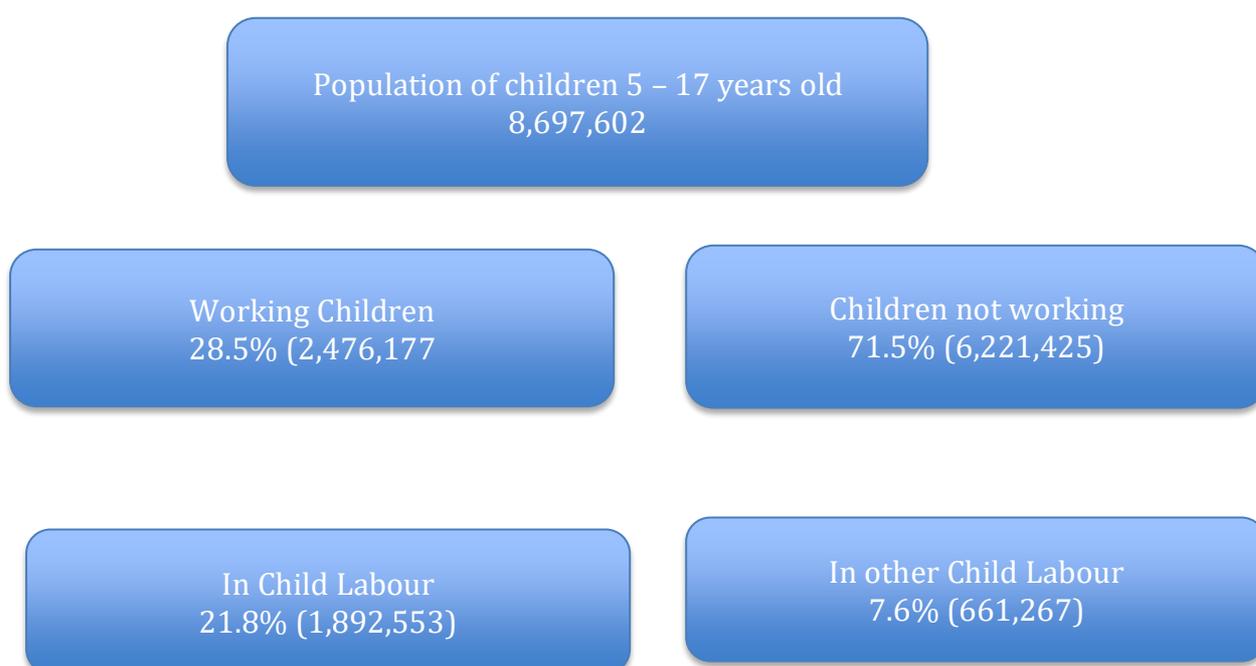
In Hazardous Child Labour 14.2% (1,231,286)	Not in Child Labour 6.7% (583,624)

Source: Child Labour Report of the Ghana Living Standards Survey Round 6 (CLR-GLSS-6), 2014

Based on the literature discussed, one can infer that for some years now, the incidence of child labour in Ghana has been fluctuating, but more generally, the rate has been declining over the years.

Child labour negatively affects the child in diverse ways. Child labour can affect the child's academic performance, physical and mental health or even cost the child's life.

For child labour's impact on academic performance (He, 2016) undertook a study to analyze the relationship between child labour and a child's academic achievement in the Gansu (one of the poorest provinces) in China. He (2016) uses data obtained from the Gansu Survey of Children and Families (GSCF) and acknowledges that there is always an issue of endogeneity when analyzing the impact of child labour and schooling. Endogeneity emerges when the unobserved heterogeneity that determines schooling is correlated with the unobserved heterogeneity that determines child labour market outcomes. Therefore, the author included predetermined variables such as previous child labour in the analysis. He (2016) again included IQ scores to control for the talent of the child. The author used OLS of his first estimation to regress separately housework, farm work and other economic activities the child was involved in at time $t-1$ on the child's academic score. A second method known as the quasi-maximum likelihood estimation (QMLE) was used for the three variables: housework, farm work, and other economic activities the child was involved in at time $t-1$. Though this

method is not significantly different from the OLS, it is more appropriate to use it for bounded data (between 0 and 100). The results in both estimations showed that a father's education has a positive relationship with child work.

Interestingly, He (2016)'s results show that the cost of education negatively affects child labour. In Gansu, when the cost of schooling increases, parents allow their children to reduce the hours of working to focus more on their education as they do not want such considerable investments to go waste. The results also show that previous time spent on child labour has a significant effect on learning achievements, and all time spent on labour, when accumulated, has a long-term negative impact on a student's learning achievement.

Holgado et al. (2014) undertakes a study on Columbia to analyze the impact of child labour on academic performance. Children who were enrolled in the child labour eradicating programme introduced in the country were interviewed for this research. The children who numbered 3,302 were interviewed over a period of three years (2008, 2009 and 2010). They include street vendors, those who worked in domestic or construction services, those who helped their parents or relatives in the family business and all other forms of child labour. A logistic regression model was used for this analysis. Variables used were work conditions, the type of labour, age at which the child started working, the daily and weekly hours involved in the work, the weekday and weekend nature of the work, as well as the diurnal profile of the work. Variables that proxy academic performance and engagement included school attendance, the teaching content of subjects and the involvement of the child in the school's activities. This research used a weighting technique in the logistic regression, which depicts the true reflection on the relationship between child labour and academic performance. This is because the child's preference was taken into consideration and weighted according to

information on the class attendance and their involvement in school activities. The results of the analysis revealed that the work conditions, the number of weekly hours worked, and whether the child works in the mornings have an adverse effect on academic performance. The results also reveal that the most significant reason why a child abandons school is that they have many competing home tasks to carry out.

As per the ILO's 2002 estimate, over 20,000 children die every year worldwide due to work-related accidents (Radfar et al., 2018). Edmonds (2003) reports that in a garment factory in Bangladesh, ten working children earning about $11 (US) a month were burned to death in November 2000 because all exits of the factory were locked. Images of children forced into prostitution, children sold as slaves, those chained in factories, among others stain the perception of child labour but fortunately, even though it prevails in Sub-Saharan Africa, only a few children experience such obscenity.

Research on the effect of child labour on learning achievement in Ghana (Heady, 2003) using data from the Ghana Living Standards Survey (1988 – 1989) showed how work outside the household could directly affect learning achievement. Learning achievement was measured based on the child's skills in reading and mathematics. A regression model was created where the test scores were given as a function of ability, age, education, work, the gender of the child and household characteristics. The direct effect of work or labour on the child's academic test scores was analyzed when there is differentiation with regard to work. Ability was measured through "innate ability" (Raven test), a straightforward reading test, an easy mathematics test, an advanced reading test, and an advanced mathematics test. Hence, all other things are kept constant, but the effect could be generated due to tiredness from work or no time to complete assignments due to work demands. A second model of education that was a function of work, ability, age, gender and household characteristics was also generated. It showed that work had an indirect effect on test scores through education as well. Therefore, combining both models

gives the total effect of work on test scores. Heady's (2003) result report the impacts of age, gender, household characteristics and work on test scores. However, there was a gap in the authors analysis, as it did not include welfare variables such as basic amenities in the household. As much as direct impact from work such as tiredness from work and lack of time, electricity, access to computers and others could also have an influence on this as well. A child may not have time to focus on an assignment, not because of work but because probably the child has to fetch water for the house before going to bed. Hence, the exhaustion comes from the fact that there is lack of water in the house and not because of the labour done during the day. The real impact of work on test scores is not shown here as a child may work longer hours and still pass his or her tests because they learn at work. This has got nothing to do with ability but hours spent actually on the job.

Many explanations have been given to the reason why the rates at which children are involved in labour market activities are highest in Sub-Saharan Africa. Some literature (Blanc, 1994; Basu and Van, 1998; etc.) reveal that poverty is the most significant force that causes most families to deploy their children into work. Poverty is a global concern as billions of people around the world live in extreme poverty. According to the World Bank's 2015 estimate, nearly one billion of the world's people live below the $1.90/day poverty line, and the rate is as high as 42.3 percent for Sub-Saharan Africa. Patel (2018) also reports that in 2015, the average poverty rate in Sub-Saharan Africa stood at about 41 percent, and that out of the world's 28 poorest countries, 27 are in Sub-Saharan Africa, with each of these countries' poverty rates above 30 percent. Admassie (2002) also reports that the absolute number of the poor in Africa has been increasing over the years compared to the rest of the world. The absolute number of people living below the poverty line in Africa increased immensely from 184 million to 216 million in 1990. As of the 21st century, more than 300 million Sub-Saharan Africa are live below the poverty line.

Poor families often depend on their working children's income to provide for their basic needs or to supplement the family's income. Evidence that child labour stems from poverty was found in a cross-country comparison of the world's poorest and wealthiest nations in 1998 (Edmonds, 2002). The poorest countries comprised those with annual per capita incomes below $1,500 (US), while the wealthiest nations comprised those with annual per capita incomes above $7,000 (US). One of the study's significant findings was that it was not unusual to find over 30 percent of children involved in labour market activities in the poorest nations, but child labour was rare in the wealthiest nations.

In Africa, many poor families send their children out to work in an attempt to escape from the situation of poverty worsening day by day. Therefore, poverty expressed in lack of viable alternatives, high illiteracy, and powerlessness is the main factor worsening child labour in Sub-Saharan Africa (Admassie, 2002). Admassie (2002) estimates a truncated Tobit regression model for the relationship between the percentage of economically active children and some variables such as poverty, the share of agriculture in GDP, total fertility rate and net primary enrolment for children aged 10 – 14 years in Sub-Saharan Africa in 1995. A significant finding from the estimated regression was a significant relationship between poverty and the percentage of economically active children in Sub-Saharan Africa. Haile and Haile (2011) also employ the bivariate probit model in analyzing the effects of some variables, which among others included age, gender, household size, on the probability that a child aged 7 – 15 years as per the 5th round of the Ethiopian Rural Household Survey (ERHS) will go to school or work. The number of livestock owned by a household and the household's land size is used to measure poverty. That is, the larger the land size and/or number of livestock ownership, the less likely it is for the household to be poor and vice versa. The authors find that an increase in the household's land size by 10 hectares decreases the probability that the child will work in the labour market and not go to school by 0.22 probability points. Also, an

31

increase in the household's livestock ownership by ten significantly decreases the probability that the child will do domestic work and not go to school by 0.11 probability points.

According to the most recent estimate of the World Bank (2019), the unemployment rate in Sub-Saharan Africa is about 6.19 percent. The intensified poverty in the region, coupled with the high unemployment rate, results in many children becoming child labourers (Admassie, 2002). Low-income families with adult members who are unemployed may have no choice but to rely on child labour to supplement their income to improve their chances of gaining necessities.

Another reason for the high rates of child labour in Sub-Saharan Africa is the lack of educational opportunities. When the available education lacks affordability, relevance or quality, children become readily available to participate in the labour market. Parents who think learning by doing is more valuable and hence find education invaluable will prefer their children to stay out of school to save their money, and children who drop out of school have a higher probability of working. Other factors include high population growth, lack of awareness of children's rights, natural disasters and armed conflict (Admassie, 2002).

Hamenoo et al. (2018) employed a qualitative design on 25 purposively selected individuals (fourteen children, two teachers, four parents, two social welfare officers, one assembly member of the area, one Christian pastor and one market queen – a female leader of traders in the market) from Pokuase in the Greater Accra Region of Ghana to study the implications of child labour on children's education and health. The children that were chosen for the study were aged 10 – 17 years, hawked on the highway at least three times a week, enrolled in school and could speak English or Twi (a dominant Ghanaian language). The authors found that the primary reasons these children were engaged in child labour were poverty, weak enforcement of education, parental absence, and weak child labour laws. From their findings, child labour

negatively affects the health and education of children. Ray (2002) also conducts a study on the "determinants of child labour and child schooling in Ghana" using data obtained from GLSS 1 (1988/89) for Ghanaian children aged 5 – 15 and finds out using the Instrumental Variable (IV) approach that there is a significant negative correlation between rural life and child labour in rural Ghana and that child labour victims must tradeoff schooling for work.

Although policies aimed at curbing child labour exist, deficiencies in those policies or lack of enforcement have resulted in child labour perpetuation. It appears there has been retrogression in the fight against child labour in Sub-Saharan Africa. Child labour increased over the 2012 to 2016 period when the ILO had its global child labour survey. It is most likely that the retrogression has been driven by economic and demographic forces that act against child labour laws or policies enacted by governments (ILO, 2017). Another reason for the retrogression is that child labour laws worldwide in Sub-Saharan Africa are often not enforced or contain exemptions that allow children to continue to supply their labour services in some sectors such as agriculture and domestic work. For instance, in Kenya, the child labour law forbids children below age 16 from engaging in industrial work but excludes agriculture, which results in the exploitation of children on farms (IOWA Labour Center, 2020).

Various literature has pointed out a significant trade-off between school attendance and work. Ahmed (1999), in his paper titled "Getting Rid of Child Labour," tests the hypothesis that school attendance reduces child labour. He does this in a cross-country analysis for 64 developing countries and three industrialized countries using the ordinary least squares regression technique. Ahmed (1999) postulates child labour as a function of the percentage of primary age group enrolment rate in education (PENR) and finds that a 10 percent increase in PENR significantly decreases child labour by 3.8 percent. The author further confirms that child labour can be totally abolished if all children are enrolled in school. In a study on the topic "Child Labour and Child Schooling in Rural Ethiopia: Nature and Trade-off", Haile and

Haile (2011) used a Tobit model to access whether or not there is a trade-off between a child's educational attainment and hours of work for children aged 7 – 15 years in rural Ethiopia. The Tobit model results revealed a negative relationship between a child in the sample's schooling and hours of work. In Ranjan (2003) study on Nepal and Pakistan, he finds out using a three-stage least squares (3SLS) that in both countries, schooling significantly reduced a child's labour hours by 390 hours in Nepal and 506 hours in Pakistan. Psacharopoulos and Akabayashi (2007) include a variable for hours of work in a probit regression for a study conducted on the trade-off between schooling and human capital accumulation (reading and mathematics) and found a significant negative impact of predicted hours of work on human capital accumulation. Boozer and Suri (2001) conducted a similar study using the Instrumental Variable (IV) strategy in a cross-sectional analysis of data obtained from Ghana on 3374 households from October 1988 to August 1989. The authors estimate that an extra hour of work reduces school attendance by 0.38 hours in Ghana. Estimates of these literatures reveal the detrimental effect of a child's economic activity on their schooling and hence human capital formation in a country.

Substantial research exists to describe and measure child labour and schooling, but there is a lack of empirical consistency on the relationship between the two. While most of the existing literature found increased schooling to decrease child labour (trade-offs), a few others, such as Ravallion and Wodon (2000), found no significant relationship between the two using the Slutsky decomposition. Their study on Bangladesh found that increases in school attendance may come out of the child's leisure hours and not necessarily from a decrease in their labour hours.

According to the UNESCO Institute for Statistics, Sub-Saharan Africa has the highest educational exclusion among the world's regions. Their estimates showed that one out of five and one out of three children from ages 6-11 and 12-14, respectively, in Sub-Saharan Africa

do not attend school. One reason for this is that families do not have enough income to sponsor these children's education. Because of this and other reasons, governments of some African countries have abolished tuition at the primary school level. Some of such countries are Malawi, Uganda, Kenya, Tanzania and Zambia.

In sub – Saharan Africa, Malawi was one of those countries that took the bold decision to introduce policies that made primary education free, and this took place in 1994. This policy entailed abolishing tuition fees, which was the leading cause of the increasing costs of education to parents, which accounted for the decline in school enrollment. In the first year, the policy was introduced (1994); primary enrolments increased by over 50%. That is from about 1.9 million in 1994 to 3.2 million in 1995. In a decade, Malawi's gross enrolment rate increased by over 90 percent, that is, between 1990 and 2000 (Riddell, 2003).

Uganda introduced the Universal Primary Education (UPE) policy in 1997. This was because the government acknowledged education as the primary foundation for the Poverty Eradiation Action Plan. With the UPE, tuition fees were abolished for 6-12-year-olds. The program was initially intended to apply to a maximum of four children per household and all disabled and orphaned children in all age groups. The year before the start of the program (1996), primary enrolment was 2.7 million but had risen to over 7 million by 2002. Irungu (2018) also reports that primary school enrollment in Uganda increased from about three million to five million in 1997 and has currently been over eight million. The gross primary enrolment rate in Uganda in 1995 was 74.3%. By the end of 2000, it had reached 135.8%. The World Bank (2003) reports that after the UPE was introduced in Uganda, primary school enrollment increased by about three million between 1996 and 2001.

After independence in 1963 in Kenya, a campaign for free primary education started. However, free primary education came to fruition in early 2003 when the new government

introduced it after being elected at the end of 2002. Primary school enrollment improved from 87 percent in 1998 to 94 percent in 2009. Between 2003 and 2012, primary school enrollment increased by nearly three million (Clark, 2015). Although gross enrollment rates in Kenya have been fluctuating over the years, they increased from 1992 to 2015. The gross enrolment rate in Kenya as of 2015 was about 109 percent.

After Tanzania gained independence, the government abolished tuition fees and other mandatory cash contributions in 2001 at the primary level. This program was a part of Tanzania's five-year Primary Education Development Plan (PEDP), which articulated the UPE within the more comprehensive Tanzanian policy and was in line with the Education for All (EFA) target to ensure the enrolment of all 7-13-year-old children by 2006. This was because the gross primary enrolment rate had fallen from 98% in 1980 to 70% in the early 1990s. In the first year, the program was introduced (2001), the gross enrolment rate increased to 100.4% (Riddell, 2003).

The above literature shows consistency in the effect of free tuition policy on school enrolment. However, findings from different works of literature on the effect of free tuition policy on child labour are not similar. Cartwright and Patrinos (1999) suggest that schooling costs significantly impact child labour force participation in Bolivia. Hazarika and Bedi (2003) also undertake a similar study on children aged 10 - 14 in 1991 for Pakistan and find a significant positive relationship between schooling costs and extra-household work (child labour in the labour market). Descriptive statistics conditional on work status from their analysis showed that primary school's direct cost decreased from an average of Rs 165 a year for working children to an average of Rs 126 a year for non-working children. Ahmed (2012) also reports that enrolment in a public school (where tuitions are free) can be used as a substitute for child labour and that ceteris paribus, a one percentage point increase in public school enrolment ratio, has the potential of reducing hours worked by a child by approximately five percentage

points. Canagaraja and Coulombe (1997) also conduct a study on Ghanaian children aged 7 – 14 years using data obtained from the 1987 – 1992 national household surveys (GLSS 1, GLSS 2 and GLSS 3) reveal that even though the government claims education is free, some parents had to pay some amounts for tuition and other direct costs such as books and uniforms. These costs, together with some cost recovery schemes, causes some parents to push their children into working in the labour market. Contrary to the results from the above literature that points out a positive relationship between schooling cost and child labour, Ravallion and Wodon (2000) analyze the effect of an education subsidy known as Food-for-Education (FFE) on schooling and child labour. They find that the education subsidy increases educational enrolment, but the subsidies effect on child labour was ambiguous. The authors had this finding from a probit regression they run on children aged 5 – 16 for Bangladesh using the 1995 – 1996 Household Expenditure Survey (HES).

Although most of the literature suggests that high school costs increase child labour and abolishing tuitions at the primary school level increased school enrolment, due to the empirical ambiguity on the relationship between schooling and child labour, it is essential to find out if tuition-free basic education policy is displacing child labour and as such simultaneously increasing school enrolments in Ghana.

CHAPTER 3: DATA

The research literature has documented only a minimal amount of information about child labour in developing countries, mainly because labour surveys do not capture children's employment or children's involvement in labour market activities (Grootaert and Kanbur, 1995). However, Ghana's case is different. The Ghana Living Standards Survey (GLSS) with its focus on households as a key social and economic unit, is a survey collected over a 12-month period which provides valuable insights into living conditions in Ghana. The survey is mainly collected to understand poverty and welfare profiles in Ghana and provides all forms of information on the household, including information on the child's labour market participation. The GLSS captures the child's activity, such as whether they worked in the labour market, were self-employed, went to school, or did domestic work over the period that the survey was information was collected. The GLSS also captures some forms of child-specific information such as the child's age and gender, the child's parental information such their father and mother's education, number of siblings, and household characteristics such as socioeconomic status, religion, asset ownership, etc. Since tuition-free basic education in Ghana started in 1995, the GLSS (3), which captures poverty and welfare profiles from 1991 – 1992 (three years to the start of the policy), will be used to determine the child's labour market participation before the tuition-free policy. The GLSS (4) will also be used to determine the child's labour market participation after the tuition-free policy because it captures information on the poverty and welfare profiles of the country from 1998 – 1999 (three years after the start of the policy).

GLSS 3 and GLSS 4 serve the purpose of this research for a number of reasons. The time periods for the two datasets are closer to the policy date and hence prevent the effects of confounding factors. As a result, there will not be many points to constrict or affect the results

from the policy. Also, the same political situation existed in both time periods as the country was governed by the National Democratic Congress from 1992 up until 2000 so the data is not affected by significant policy changes.

Although some children as young as 5 years work in Ghana, most of the information collected on employment in both surveys (GLSS 3 and GLSS 4) were obtained from household members 7 years and above. Therefore, in other to prevent any form of bias, household members under the age of 7 are excluded from the study. Therefore, a child in this study is considered a victim of child labour if he/she is aged 7 to under 18 years, has for the past 12 months worked to earn some form of income or wages, from self-employment, or from working on the farm, or from working unpaid in a family member's enterprise. Both surveys provide information on the first, second, third and fourth jobs done by children but for simplicity, consideration is only given to a child's first job.

Table 3.1 provides information on some sample sizes in both GLSS surveys and Table 3.2 provides statistics on some differences between some of the variables of interest for this research for individuals in the treatment group (children aged 7 – 15 years). These include demographic characteristics of the child, household characteristics and some of the activities the child was involved in for the 12-month period when both surveys were taken

Table 3.1

Sample statistics of GLSS

	GLSS 3 1991/1992	GLSS 4 1998/1999
Number of individuals	20,403	26,411
Number of households	4,552	5,998
Number aged 7 - 15	5,410	7,103
Number aged 16 - 18	1,268	1,658

Table 3.2

Summary of observations in each category for children aged 7 - 15

Variable	GLSS 3 1991/1992	GLSS 4 1998/1999
Average age	10.7	10.9
Male	2,839	3,570
Male head	3,765	4,856
Father lives in household	3,229	4,103
Household size	7	6.42

Educated Father	1,351	1,888
Educated mother	525	805
Household income	509,870	2,706,911
Worked in the labour market	22	358
Self-employed	77	838
Worked on the farm	1,544	1,746
Worked unpaid for a family member	89	287
Avg. hours spent on housekeeping	9.89	3.55
Ever attended school	4,393	5,517
Worked and went to school	1,732	2,139

The information provided in Table 3.1 shows that, the number of persons who were successfully interviewed in the survey preceding the tuition-free policy was 20,403 and these individuals were from a total of 4,552 households. The numbers of children in the treatment (those who benefited from tuition-free basic education) and control group (those who did not benefit from the tuition-free basic education) for the same survey data was 5,410 and 1,268 respectively. Also, 26,411 individuals were successfully surveyed in the data used for analysing the effect of the tuition-free policy after it started. These individuals were from a total of 5,998 households. In addition to this, 7,103 of the children formed part of the treatment group and 1,658 were in the control group

From Table 3.2, we find from GLSS 3 that, for the sample of 5,410 children in the treatment group, their average age was 10.7 years and 2,839 of these children were male. Also, 3,765 and 3,229 of these children came from households with a male head and a household with the father living in the house respectively. The average number of members in a household was 7 people. In addition to these, 1,351 had fathers who had some form of formal education which ranges from primary education to tertiary education, 525 had mothers who had some form of formal education, 22 had worked or were still working in the labour market, 77 had been or were self-employed, and 89 had worked or worked unpaid for a family member and spent on average 9.89 hours doing some form of housekeeping activity such as fetching firewood and fetching water over a 7 day period. The largest group of working children worked on the farm where 1,544 of the children aged 7 – 15 in the sample worked.

Similarly, the average age for the 7,103 sample of children aged 7 – 15 for the GLSS 4 was approximately 10.9 and approximately 3,570 are male. 4,856 and 4,103 were from households with a male head and father living in the household respectively. Also, 1,888 had fathers who had received some form of formal education, 805 had mothers who had received some form of formal education, 358 had worked or were working in the labour market, 838 had been self-employed or were self-employed, 287 had worked or were working unpaid in a family enterprise. Like the data obtained in 1991/1992, the largest proportion of working children worked on the farm where 1,746 of children aged 7 – 15 worked. Also, over a 7-day period, children in the treatment group spent on average 3.55 hours doing some form of housekeeping activity.

For the time period 1991/1992 and 1998/1999, a typical child aged between 7 and 15 came from a household with an average income of ¢509,870 (8.89 USD) and ¢2,706,911 (47.22 USD) respectively.

This signifies an increase in average household income for our sample of interest over the 6-year period. Estimates from both samples also show that the fathers of the children in the sample of interest received more formal education than the mothers. The proportion of children who attended school over the 12-month period of each of the surveys also decreased from 81.2% to 77.7% between the two periods and the proportion of children who worked over the 12-month period increased from 24.45% to 30.11% between the two periods. The variations in proportions of children who went to school or worked cannot be attributed to the tuition free policy because it does not account for time trends that may exist or permanent differences between the children aged 7 – 15 in both samples.

CHAPTER 4: METHODOLOGY

An econometric model is necessary to estimate the probabilities that a child in the sample considered will either go to school or be involved in child labour activities or will go to school and be involved in the labour market at the same time. The multinomial probit model or logit model would be the right choice for this estimation if there were a real reason to assume that schooling and working are independent events for a child. The dependent variable could easily be constructed to capture all three possibilities by assigning one of three values to each of the possible outcomes. However, the choice to attend school may limit the labour market activities that a child can participate in, and vice-versa, so the two events are not likely to be independent. Instead, the bivariate probit model will be used to test the likelihood of the child working, schooling or doing both since it makes no assumption about any interdependence between schooling and working, although it does allow for a formal statistical test for any interdependence.

4.1 The Models and Estimation Methodologies

In a bivariate probit model, let the latent variable y_1^* represent the decision to go to school and y_2^* represent the decision to work. A more general specification of the model would be two estimation equations.

$$y_{1i}^* = \beta_1' x_{1i} + \varepsilon_{1i}, \quad \text{where } y_{1i} = 1 \text{ if } y_{1i}^* > 0, \text{ and 0 otherwise.} \quad (4.1)$$

$$y_{2i}^* = \beta_2' x_{2i} + \varepsilon_{2i}, \quad \text{where } y_{2i} = 1 \text{ if } y_{2i}^* > 0, \text{ and 0 otherwise} \quad (4.2)$$

The bivariate probit model makes assumptions about the properties of the error term in (4.1) and (4.2).

$$E[\varepsilon_1|X_1] = E[\varepsilon_2|X_2] = 0$$

$$Var[\varepsilon_1] = Var[\varepsilon_2] = 1$$

$Cov[\varepsilon_1, \varepsilon_2] = \rho$ (since the bivariate probit[1] model allows for some form of correlation between the errors of the two equations)

The bivariate probit model is estimated as a system of the two equations (4.1) and (4.2). This allows for incorporation of the correlation between the error terms, if it exists. [2]

The bivariate normal density function given by;

$$\phi(x_1, x_2; \rho) = [2\pi(1 - \rho^2)^{\frac{1}{2}}]^{-1} \exp [^1\!/_2 (1 - \rho^2)^{-1}(x_1^2 + x_2^2 - 2\rho x_1 x_2)] \qquad (4.3)$$

There are two dependent variables for a bivariate probit model, one for (4.1) and one for (4.2). In this study, the first dependent variable is defined as 1 if the child went to school in the last 12 months or 0 if otherwise, and the second dependent variable is defined as 1 if the child was involved in any labour market activity in the last 12 months and 0 otherwise. A child in this model is considered to have been involved in an economic activity if they worked in the labour market, were self-employed, worked on the farm, or worked unpaid in a family enterprise. Domestic activities are excluded from the list of economic activities as most of them are not

---

[1] The two error terms are jointly normal with mean vector 0 and variance-covariance matrix S (2×2 marix)

[2] See Greene, W. H. (2002). Econometric Analysis. Fifth Edition. Prentice Hall. pp 710 – 713 for the derivation of the log likelihood and the marginal effects of the bivariate probit model

classified as child labour according to the ILO. The explanatory variables used include child-specific variables such as the child's age and gender, parental specific variables such as their educational level. Household-specific variables such as household income[3], size, and gender of the household head are also included. A variable for the square of the child's age is included to account for non-linear relationship that may exist between the child's age and whether they will go to school or work.

One might suspect that the errors are correlated between (4.1) and (4.2). A positive shock to the probability that a child will attend school could reduce the probability that the same child will choose to work. If ρ is the correlation coefficient between the error terms in the two equations, then, when $\rho = 0$, y_{1i} and ε_{2i} or y_{2i} and ε_{1i} are not correlated. If $\rho \neq 0$, then y_{1i} and ε_{2i} or y_{2i} and ε_{1i} are correlated. To test this hypothesis,

Let the null hypothesis be:

$$H_0: \rho = 0$$

And the alternate hypothesis be:

$$H_1: \rho \neq 0$$

Refusing to reject the null hypothesis will imply equations (4.1) and (4.2) can be estimated as univariate probit models to determine the effects of the variables considered in the study on the probabilities that the child will go to school, work or do both. Rejecting the null hypothesis in favour of the alternate hypothesis will also imply the bivariate probit model is the right econometric model to be used. Under H_0 the log likelihood function become a sum of the loglikelihood of the two univariate probit models. That is;

---

[3] An independent variable measuring poverty will be a useful addition, but there is no data for this.

$$l_0(\beta_0) = l_1(\beta_1) + l_2(\beta_2)$$

The likelihood ratio (LR) approach to test significance of the correlation of interest is of the form;

$$LR = -2\left[l(\tilde{\beta}_0) - l(\hat{\beta})\right] \sim \chi_1^2$$

Where;

$l(\tilde{\beta}_0)$ is the sum of the Maximum Likelihood Estimates (MLE) of the two univariate probit models.

$l(\hat{\beta})$ is the MLE for the bivariate probit model.

Hence the likelihood ratio test will be comparing the likelihood from the bivariate probit model (allowing for cross-equation correlation) to the likelihoods summed together (assuming no-cross equation correlation)

The bivariate probit model provides the marginal effect of each independent variable on the probability of attending school, working, or attending school and working, and then provides an estimate of the probability for each category evaluated at the mean values of the independent variables – an average person in the entire sample. However, the approach does not distinguish between individuals who have the potential to benefit from the free tuition policy (families with children in primary school) and those who do not (families with children in schools above the primary school level), neither does it help in determining the causal

impact of the tuition-free policy on the dependent variables of interest. A difference-in-difference estimation technique provides a solution to this and will be used to determine the causal impact of the tuition-free policy on the probabilities that the child will go to school, be involved in child labour activities or do both. The difference-in-differences estimator is defined as the difference in average outcomes in the treatment group before and after treatment, minus the difference in average outcome in the control group before and after the treatment: hence it is literally a "difference in differences".

To estimate the impact of the tuition-free policy, individuals were divided into two groups, D=(C, T), where;

D = C = 0 if the individual was not benefitting from the tuition-free policy i.e. the control group.

D = T = 1 if the individual was benefitting from the tuition-free policy i.e. the treatment group.

We also observe the individuals at two different time periods, t = (0,1), where;

Period = 0 indicates a time period before the tuition-free policy, i.e. pre-treatment.

Period = 1 indicates a time period after the tuition-free policy, i.e. post-treatment.

The outcome Y_{it} is a binary dependent variable where $Y_{it} = 1$ if individual i at time t has attended a school in the last 12 months. It is modeled by the following equation:

$$Y_{it} = \alpha + \beta D_i + \gamma Period_t + \delta(D_i * Period_t) + \varepsilon_{it} \qquad (4.4)$$

where the coefficients α, β, γ, and δ are all parameters to be estimated and ε_{it} is the error term with zero conditional mean. The parameter δ can be estimated using difference-in-

differences (DD), which, intuitively speaking, first estimates the over-time difference (post – pre) in outcome for the treatment and control groups, and then takes the difference in these differences. The difference-in-differences approach will provide a causal estimate of the impact of the tuition-free policy because it corrects for any time-trend bias and permanent average differences in the outcome between the treatment and the control groups. In the context used here, the difference-in-difference technique tests the hypothesis that the proportions of children who go to school or work or both are equal across treatment and control groups, equivalent to the contingency table technique used in other applications.

For a simple pre-versus-post difference:

$$D_1 = E[Y_{it}|D_i = 1, Period_t = 1] - E[Y_{it}|D_i = 1, Period_t = 0] \quad \text{(4.5)}$$

From equation (4.4),

$$E[Y_{it}|D_i = 0, Period_t = 0] = \alpha \quad \text{(i)}$$

$$E[Y_{it}|D_i = 1, Period_t = 0] = \alpha + \beta \quad \text{(ii)}$$

$$E[Y_{it}|D_i = 0, Period_t = 1] = \alpha + \gamma \quad \text{(iii)}$$

$$E[Y_{it}|D_i = 1, Period_t = 1] = \alpha + \beta + \gamma + \delta \quad \text{(iv)}$$

Substituting equation (ii) and (iv) into equation (4.5);

$$D_1 = \alpha + \beta + \gamma + \delta - (\alpha + \beta) = \gamma + \delta$$

This simple pre-versus-post difference estimator would be biased as long as $\gamma \neq 0$. Also, for a simple treatment-versus-control difference:

$$D_2 = E[Y_{it}|D_i = 1, Period_t = 1] - E[Y_{it}|D_i = 0, Period_t = 1] \quad (4.6)$$

Substituting equation (iii) and (iv) into equation (4.6)

$$D_1 = \alpha + \beta + \gamma + \delta - (\alpha + \gamma) = \beta + \delta$$

This simple treatment-versus-control difference will also be biased so long as $\beta \neq 0$. But for a difference-in-difference estimate, that is;

$$DD = E[Y_{it}|D_i = 1, Period_t = 1] - E[Y_{it}|D_i = 1, Period_t = 0] -$$

$$(E[Y_{it}|D_i = 0, Period_t = 1] - E[Y_{it}|D_i = 0, Period_t = 0] \quad [4.7]$$

$$DD = \alpha + \beta + \gamma + \delta - (\alpha + \beta) - (\alpha + \gamma - \alpha)$$

$$DD = \delta$$

which is unbiased regardless of the value of β (the permanent average differences in outcome between the two groups) or the value of γ (time-difference effect that may exist in the outcome of interest).

4.2 Estimation Results

The national basic education system in Ghana is divided into primary education and lower secondary education (junior high school). Primary education, as defined by the country, begins at age 6 and has a duration of 6 years. The entry age of lower secondary education (Junior high school) is 12 years, and it lasts 3 years. Secondary education also starts in Ghana at age 16 and has duration of 3 years (UNESCO, 2012). This implies that basic education, as defined by the country, starts at age 6 and ends at age 15 on average and secondary education starts at age 16 and ends at age 18 on average. However, most of the survey information was collected on individuals 7 years old and above. Therefore, the treatment group comprises children aged 7 – 15 years since the tuition-free policy that was implemented was for basic education and the control group comprises children aged 16 – 18 (children who were expected to be in secondary school where tuitions were not for free).

Table 4.1 provides the results obtained from the bivariate probit regression model and Tables 4.2 and 4.3 gives the estimates of the marginal effects of some variables that affect schooling and working on the probabilities that a child in our sample would go to school, work or go to school and working from the bivariate probit models. These estimations were done using the STATA econometric package.

A difference-in-difference estimate of the impact of tuition-free policy on school attendance, child labour and on both school attendance and child labour is also provided by Tables 4.4, 4.5 and 4.6 respectively.

Table 4.1

Bivariate probit regression estimate for before and after the free-tuition policy

Variable	Pre – Policy		Post – Policy	
	School	Work	School	Work
Age	.431***	.2403***	.1793***	-.0782
	(.078)	(.0708)	(.0626)	(.05658)
Age square	-.0178***	-.00522*	-.00799***	.0037
	(.0036)	(.00319)	(.00285)	(.00257)
Male	.292***	.1171***	.0359	.01018
	(.0424)	(.0367)	(.0335)	(.02998)
Male head	-.4843***	.1232**	-.0787	.2605***
	(.0778)	(.06411)	(.0523)	(.04677)
Father in hh	-.5063***	.344***	.2313***	-.09703*
	(.0712)	(.0645)	(.05599)	(.05196)
Household size	-.0521***	.0207***	-.0333***	-.0229***
	(.0068)	(.0063)	(.00666)	(.00614)
Income	.0054***	-.0023***	.00049***	-.000068
	(.00052)	(.0004)	(.00006)	(.00004)
Father's education	.8465***	-.2366***	.44828***	-.20334***
	(.0778)	(.0604)	(.054)	(.04868)
Mother's education	.6486***	-.0955	.09996*	-.0613
	(.1086)	(.0654)	(.0583)	(.04989)
Constant	-.696*	-3.0418***	-.3154	.3712
	(.43)	(.3977)	(.336)	(.30383)

Probability	0.602	0.0636	0.479	0.149
Sample size	5,358		7,103	

standard errors in parentheses
*significant at 0.1 significance level
**significant at 0.05 significance level
***significant at 0.01 significance level

Table 4.2

Marginal effects from bivariate probit pre tuition-free policy

	School	Work	School and Work
Age	-.0078	-.0240***	.1090***
	(.0245)	(.0086)	(.0210)
Age square	-.0011	.00127***	-.0031***
	(.0011)	(.00039)	(.001)
Male	.0088	-.0189***	.0600***
	(.0129)	(.0046)	(.011)
Male head	-0.1000***	.0450***	-.0023
	(.022)	(.0067)	(.0194)
Father in hh	.1760***	-.0717***	.0560***
	(.023)	(.008)	(.0194)
Household size	-.0136***	.0058***	.0014
	(.0022)	(.0008)	(.0019)
Income	.00145***	-.00062***	-.00019

	(.00015)	(.00006)	(.00013)
Father's education	.1690***	-.0700***	-.0107
	(.0198)	(.0054)	(.0181)
Mother's education	.0990***	-.0473***	.0144
	(.023)	(.0056)	(.021)

Probability	0.602	0.0636	0.247
Sample size	5,358		

Correlation coefficient (ρ)= -0.1910

Likelihood-ratio test of $\rho =0$:   chi2(1) = 46.775   Prob > chi = 0.0000

Notes: Marginal effects are computed at the mean values of the explanatory variables across the two possible categories (working in the labour market and schooling)

standard errors in parentheses
***significant at 0.01 significance level

Table 4.3

Marginal effects from bivariate probit post tuition-free policy.

	School	Work	School and work
Age	.0460**	-.0378***	.0066
	(.0209)	(.0129)	(.0184)
Age square	-.0021**	.0017***	-.00023
	(.001)	(.0006)	(.0008)
Male	.0010	-.0054	.0095
	(.011)	(.0069)	(.0098)
Male head	-.0904***	.0347***	.0676***
	(.017)	(.01)	(.0147)

Father in hh	.0580***	-.0490***	.0110
	(.019)	(.012)	(.0166)
Household size	-.0032	.0039***	-.0130***
	(.0023)	(.0014)	(.002)
Income	.00008***	-.00009***	.00006***
	(.00002)	(.00001)	(.00002)
Father's education	.1140***	-.0862***	.0062
	(.0179)	(.0091)	(.0158)
Mother's education	.0310*	-.0217**	-.0026
	(.0186)	(.011)	(.0165)
Probability	0.479	0.149	0.305
Sample	7,103		

Correlation coefficient (ρ) = -0.42498

Likelihood-ratio test of $\rho = 0$ chi2 (1) = 435.496   Prob > chi2 = 0.0000

Notes: Marginal effects are computed at the mean values of the explanatory variables across the two possible categories (working in the labour market and schooling)

standard errors in parentheses
**significant at 0.05 significance level
***significant at 0.01 significance level

The marginal effects estimate from the bivariate probit regression for the data obtained from the survey that was carried out before the tuition-free policy (Table 4.2) reveal that, all things being equal, on any given day in 1991/1992, a year increase in the age of a child significantly decreases the probability that they will work by 0.024 and increases the probability that they will go to school and work at the same time by 0.109. The results also show that there is a significant non-linear relationship between the child's age and the probabilities that they would work or go to school and work at the same time. Also, male children in the sample have

a significant 0.0189 lower probability of working but an 0.06 higher probability of going to school and working, than females. In addition to these, children from households with a male household head have an 0.1 lower probability of going to school but an 0.045 higher probability of working than children from households with female heads. The presence of a father in the household significantly increases the probability that the child will go to school or go to school and work at the same time by 0.176 and 0.056 but decreases the probability that they will work by 0.0717. An increase in a household's membership by one person significantly decreases the probability that a child in our sample will go to school by 0.0136, but significantly increases the probability that the child will work by 0.0058. Also, an increase in household income by ¢100,000 (1.74 USD) significantly increases the probability that a child will attend school by 0.0145 and decreases the probability that the child will work by 0.0062. A child's parent's education has also proven to be a significant determinant of whether the child will go to school or work. The probability that a child who has an educated father in our sample will go to school or work is 0.169 more and 0.07 less, respectively, than a child with a father without any formal education. Children with educated mothers also have a 0.099 higher probability of going to school and an 0.0473 lower probability of working than children with uneducated mothers.

The marginal effect from the bivariate probit post tuition-free policy (Table 4.3) also reveal that, all things being equal, for any given day in 1997/1998, a child's age, gender of household head, whether or not the father lives in the household, household income and parent's education have a significant impact on whether the child will go to school or work. According to the estimate, a year increase in a child's age significantly increases their probability of going to school by 0.046 and decreases the probability that they will work by 0.038. The results further reveal that there is a significant non-linear relationship between a child's age and the probabilities that they would work or go to school. Also, children from households

with male household heads have a 0.0904 lower probability, an 0.0347 higher probability and an 0.068 higher probability of going to school, working, and doing both respectively than households with female household heads. A child in the sample whose father lives with them in the household has a 0.058 higher probability of going to school and an 0.049 lower probability of working. The results further show that an increase in the number of people in a household by one increases and decreases the probability that a child in the sample will work or go to school and work at the same time by an 0.0039 and 0.013, respectively. An increase in household income by ¢100,000 (1.74 USD) significantly increases the probability that a child will attend school by 0.0008, decreases the probability that the child will work by 0.0009, and increases the probability that they will work and go to school at the same time by 0.0006. Children whose fathers have formal education are also 0.1140 more likely, and 0.0862 less likely to go to school and work respectively. Also, children in the sample whose mothers have some form of formal education are 0.031 more likely to go to school and 0.0217 less likely to work than those with uneducated mothers.

[4]Evidence from both surveys supports the ILO's 2017 finding that younger children are more likely to work than older children. The results are however contrary to the ILO's worldwide estimate that boys are more likely to be economically active than girls. One explanation that can be given to this is that most child labourers in Ghana are the female *kayayei's* who have migrated from the northern to the southern parts of the country to work as porters. However, further studies have to be carried out to prove this.

The finding of the research that children from female-headed households are more likely to go to school and less likely to work than those from male-headed households is similar to the

---

[4] This study holds important explanatory variables constant, while the ILO findings are just proportions from a sample.

findings of Canaragah and Coulombe's (1998) study on Ghana but contrary to the findings of Coulombe (1998) and Grootaert (1998) on rural areas in Cote d'Ivoire, and Bhalotra and Heady (1998) for girls from rural areas in Ghana. All these studies' findings make intuitive sense because females are likely to care more for their children and so would prefer they go to school and not work. On the contrary, most households end up being headed by females because of the man's death (husband) or that the man has permanently or temporarily left the household and might force female heads to use child labour because of economic hardships.

The research's results support the ILO's report and the findings of literatures such Brivio (2016), Edmonds (2002), Grootaert (1998) that poverty is a significant factor that force children into child labour or reduced school enrolment. Grootaert (1998) found that for urban areas, poverty significantly increases the probability that the child will only go to school by 9 percentage points and on the probability that they would go to school and work at the same time by 13 percentage points. These findings make sense because children from poor backgrounds may have to stop schooling to work to supplement family income or take care of themselves in the case of orphaned children. Results from both surveys show that children from wealthier households, that is, households with higher incomes are more likely to go to school and less likely to work than those from poorer households. Bhalotra and Heady (1998), however, found a conflicting result to this popular believe. The authors found a bell-shaped relationship between child work and poverty in Ghana for girls and no relationship between the two for boys. This finding is also meaningful because poor households in Ghana are often located in areas with slow-moving economies which is generally characterized by low demand for labour.

The study also finds that the likelihood of a child going to school or working is highly dependent on parental education for both surveys. The result of the study is in line with the

findings in the literature works such as Ahmed (2011), Dublow et al. (2010), Coulombe (1998), Canagarajah and Coulombe (1997), and Nielson (1998). Ahmed's (2011) study on Bangladesh found that female children with educated mothers and fathers were more likely to go to school and less likely to be in child labour than girls with uneducated mothers and fathers. Dublow et al. (2010) carried out a study on Columbia county in New York State and found parental education to predict the child's future educational and occupational success significantly. Coulombe's (1998) study on Cote d'Ivoire, Canagarajah and Coulombe's (1997) study on Ghana and Nielson's (1998) study on Zambia found that the probability that a child would go to school or be in child labour changed by one to two percentage points per year in parental education, being positive for schooling and negative for child labour. However, Bhalotra and Heady (1998) found no substantial parental education effect on schooling and child labour. The only strong and statistically significant effect found by Bhalotra and Heady was for girls with mothers with secondary education. The authors found that these girls work less than their colleagues with mothers with no secondary education.

The research finding is further in line with literature such as Canarajah and Columbe (1999) and Tienda (1979) that found the presence of the father in a household positively influences the likelihood that the child would go to school, but influence the likelihood that they would work negatively.

The free tuition policy induces substitution and income effects for choosing whether to attend basic school. The relative price of education (tuition per unit of wage rate) decreases dramatically, incentivizing a substitution away from work to education (substitution effect). Free tuition increases household wealth for those households with school age children and increases consumption of non-education goods (income effect). Therefore, it is worth noting

that the net effect the tuition-free policy could be positive or negative for basic school attendance.

The estimate of the Pearson correlation coefficient for the relationship between the probabilities of the child going to school or working before and after the tuition free policies shows a negative relationship between the two with the correlation coefficients being -0.191 and -0.425 for before and after the policy respectively. The likelihood-ratio test for significance of the correlation coefficient for both surveys lead to a rejection of the null hypothesis that there is no correlation between schooling and working at a significance level of 0.01. The results confirm that the negative relationship that the Pearson correlation found to exist between schooling and child labour in Ghana is statistically significant. This finding justifies the use of the bivariate probit model.

Table 4.4

Difference-in-difference estimate for tuition-free policy impact on school attendance

	Before	After	Difference
Treatment	0.814	0.777	-0.037
Control	0.813	0.801	-0.012
Diff-in-Diff (DD)			-0.025
			(0.12)

p-value in parenthesis

60

Table 4.5

 Difference-in-difference estimate for tuition-free policy impact on child labour

	Before	After	Difference
Treatment	0.32	0.456	0.136
Control	0.52	0.496	-0.024
	Diff-in-Diff (DD)		0.16
			(0.000)

p-value in parenthesis

Table 4.6

 Difference-in-difference estimate for tuition-free policy impact on the child attending school and working at the same time.

	Before	After	Difference
Treatment	0.245	0.301	0.056
Control	0.369	0.352	-0.017
	Diff-in-Diff (DD)		0.073
			(0.000)

p-value in parenthesis

The difference-in-difference estimates from Table 4.4 suggest that after the tuition-free policy, school attendance decreased for both primary and secondary school students, and that the difference between attendance decreases was not statistically significant. The research finding

in Table 4.5 shows that after the start of the tuition-free policy the probability that a child in primary and junior high school will be involved in child labour increases by approximately 0.136 probability points but decrease the probability that a child in secondary school will be involved in child labour by 0.024 probability points. The causal effect of the tuition-free policy as shown by the difference-in-difference estimate shows that the policy significantly led to a significant increase in the probability that a child in the treatment group will work by 0.16 probability points. However, the difference-in-difference estimate for the research shows that the tuition-free policy led to a significant increase in the probability that a child in the treatment group (those expected to be enrolled in basic education) will go to school and work at the same time by approximately 0.073 probability points.

Contrary to the findings of most of the literature, this research's finding is similar to the findings of He (2016) that argued that in the Gansu province of China, parents make their children work less in the labour market and concentrate more on their schooling as they do not want their huge investments to go waste when the cost of schooling increase. Ghana's case may also suggest that some parents do not value education because of its low cost and would rather allow their children to work more and go to school less as they do not have any investment that would go waste. However, further research has to be conducted on Ghana to prove this.

One can also infer from the results obtained from the difference-in-difference estimate in Table 4.6 that the reason why some children in Ghana do not go to school is not entirely because of tuition costs but may be due to factors such as the relevance of the incomes earned by children on the ability of the household to meet basic necessities or that children or their families are ignorant about the adverse effects of child labour on schooling or on future prospects. However, further research has to be undertaken to further confirm or dispute this.

CHAPTER 5: CONCLUSION

5.1 Research Summary

Millions of children worldwide are trapped in economic activities, which interfere with their education and are detrimental to their physical, social, moral, and mental wellbeing. Children involved in these kinds of activities are considered victims of child labour. Child labour has existed throughout history. Over a few decades ago, children were not considered humans with rights other than economic assets for their families and did the same jobs as adults. Child labour can be traced to almost all nations globally, but many pieces of literature have shown its prevalence to be highest in Sub-Saharan Africa. Some literature works blame the high rates of child labour in Sub-Saharan Africa on past slavery and others on the region's high poverty incidence. Children in Sub-Saharan Africa engage in economic activities to either take care of themselves (for instance, orphaned children), support friends, supplement their family's income, or because they consider the returns to work higher than the returns to schooling.

The story of child labour in Ghana is no different from that of most developing countries. The jobs children in Ghana do, among others, include farming, especially cocoa farming, fishing, street hawking and illegal gold mining locally known as *galamsey*. In Ghana, most of the economic activities occur in the south and hence, the regions in the south experience large influxes of people (including children) from the north and other neighbouring countries each year. This form of movement is known as the north-south migration. Most of the girls who migrate partake in porterage jobs locally known as *kayayei*, while most of the boys are into truck pushing and the rest do all types of menial and hazardous jobs. Local governments and

international organizations such as the ILO have in place measures for curbing child labour worldwide. The Ghanaian government has also put in place various policies and legal and institutional measures to reduce child labour incidences in the country, contributing to the decline in the country's child labour incidences over the years.

The adverse effects of child labour on the child and the economic and social development of affected countries are apparent. Children who are victims of child labour are most likely to lack the pleasant memories of childhood and face physical, psychological, and sexual abuse. Schooling of children who are victims of child labour is negatively affected when they have to skip classes repeatedly or drop out of school. Children forced into labour are expected to earn lower lifetime incomes. Hence, in the long run, these children are expected to earn lower incomes. Some literature has also found a negative relationship between child labour and the child's economic performance. Findings like these show that the long-run productivity and wages children in child labour get affected. Also, poverty is high in countries where child labour prevalence is high because child labour affects intergenerational mobility, increasing poverty. Child labour can also affect technological advancement when manufacturers depend on cheap labour obtained from child employees and do not invest in improved production methods.

Some literature has shown that there is a significant inverse relationship between schooling and child labour and hence explain that to reduce child labour, factors that promote schooling must be encouraged. The right to formal education has plausibly become one of the most essential human rights in the 21st century, making children's economic exploitation in performing hazardous work fundamental violations of their human rights. This and the many benefits of schooling may explain why the aim of the Millennium Development Goal (2) was for every child to have access to primary education. Most countries worldwide, including

some Sub-Saharan African countries, have come close to the attainment of this goal. Most of these countries' approach to achieve this was to abolish all forms of fees at the primary school level. Evidence from several studies shows that enrolment in primary schools increased after tuitions were abolished.

Ghana is one of the Sub-Saharan African countries that recognize the benefits of educational attainment. Successive governments have put in place policies to increase educational enrolment and attainment. The policy of free tuition and all other costs to schooling, such as the cost of uniforms, books among others, at the basic level (primary and junior high school), was included in the constitution of the country not long after independence, but tuitions were only abolished in basic schools in 1995. In 2017, the government of Ghana further abolished tuitions at the senior high school level. There may be many reasons for this kind of investment by the Ghanaian government. However, the question arises as to whether tuition-abolishing policies have served to increase schooling and reduce child labour in the country and if abolishing tuition at the senior high school level in Ghana was necessary if it was solely to increase schooling and reduce child labour.

The tuition-free senior high school is recent; therefore, no relevant data exists for this study. The study is therefore carried out only on primary schools. The GLSS 3 (collected in 1992/1993) and GLSS 4 (collected in 1997/1998) are the data sources for this study. The bivariate probit regression is the econometric model used for analyzing the marginal effects of some of the variables used in the study on whether or not the child will go to school, work or go to school and work at the same time. The maximum likelihood ratio approach is also used to answer whether there is an inverse relationship between schooling and child labour for Ghana's case. The difference-in-difference econometric model is also used to determine

the causal impact of the tuition-free policy on the probabilities of whether the child will go to school, work or go to school and work at the same time.

Estimates from the study reveal that there is indeed a significant negative relationship between schooling and child labour which is in accordance with results from most of the literature. However, the research results from the difference-in-difference econometric model show that after the implementation of the free basic education policy in 1995, the probability of the child's school attendance decreased but was statistically insignificant, the probability that the child will be involved in child labour increased significantly and the probability that a child in the sample will work and go to school at the same time significantly increased[5]. The results support the notion that for low-income households, early education and income from child labour are not viewed as substitutes, rather they are segmented markets with no substitutability.

5.2 Limitations of Study

Although some of the variables used in the bivariate probit regression showed statistically significant effects on the dependent variables of interest, the marginal effects change depended on the number of variables used in the analysis. The difference-in-differences estimation method is also flawed because it does not offer any suggestions as to the why the results are counter to what one would expect or what has been reported by literature such as Riddell (2003) and Hazarika and Bedi (2003). The method merely tests the hypothesis that the proportions of children who go to school, work, or do both are drawn from the same

---

[5] Perhaps families decide which child goes to school (likely the male) while the other works (likely the female). Also, it is possible that the second control group has biased attendance statistics since a prerequisite for attending high school would be completing junior high school.

population, without offering any explanation as to why the hypothesis might be rejected, although the result is important to motivate the bivariate probit model used. This literature reports that schooling's cost has a positive relationship with schooling and a negative relationship with child labour. The study does not analyze the long-run impact of the tuition-free policy, which could demonstrate a positive impact on schooling and a negative impact on child labour.

5.3 Policy Recommendations

It has been established from the research finding that tuition-free basic education did not help in significantly reducing child labour and increasing schooling for the period that it was considered. Hence, the tuition-free senior high school policy is most likely a waste of resources if its sole aim is to increase school enrolment and reduce child labour. However, the findings show that wealthier households and households with fewer members are more likely to send their children to school and less likely to make them work than poorer households and households with many members. Hence, the reason why some children in Ghana work and do not go to school is not entirely because of tuition costs. For instance, policies aimed at reducing poverty and the number of people in the household will help promote school attendance and reduce child labour. Some of the policies for reducing poverty may be for the government to increase the minimum wage and provide poor households with means-tested benefits such as food stamps, unemployment benefits and income support. To promote smaller household sizes, the government can promote fewer childbirths per family by providing incentives to families with fewer children. For instance, the government can offer to support couples' basic needs (food, clothing and shelter) if they have two or fewer children.

Also, the prosecution of parents who sell their children into slavery will be essential for attaining this goal. Prosecution may include making parents serve short jail terms or fine parents who allow their children to be enslaved. Finally, the enforcement of the pre-existing policies will go a long way in promoting school attendance and reducing child labour.

5.4 Further Studies.

The study has made some suggestions without proof about the reasons why some of the findings differ from some popular literature results. Some of which is that *kayayei's* (head porters) form the most significant proportion of child labourers in Ghana, and most of them are female. Further studies can be carried out on this. If proven to be accurate, then policies for reducing child labour can be targeted at discouraging north-south migration in Ghana, such as encouraging investment in business establishments in the north and not making the south the center of all major economic activities. Also, in Ghana it is general knowledge that private basic schools where tuitions are not for free are of a better quality than public basic schools that are tuition free and hence some parents value them less and as such do not care if the children stayed out of school or worked. Further studies can be carried out on this and if proven to be true, then it would be better of for the government to invest in and promote the quality of public basic schools in order to promote enrolment and reduce child labour.

To conclude, Ghana's tomorrow is dependent on its children today. Hence, to secure the country's future, the fight to promote education in the country and that against child labour must be won.

REFERENCES

Admassie, A. (2000). *The Incidence of Child Labour in Africa with Empirical Evidence from Rural Ethiopia.* ZEF Discussion Papers on Development Policy. Retrieved January 13, 2021, from https://www.econstor.eu/bitstream/10419/84748/1/zef_dp32.pdf

Admassie, A. (2012). *Explaining the High Incidence of Child Labor in Sub-Saharan Africa.* African Development Review. 14(2). Retrieved February 3,2020, from https://doi.org/10.1111/1467-8268.00054

Adu-Gyamfi, S., Donkoh, W. J., and Addo, A. A. (2016). *Education Reforms in Ghana: Past and Present.* Journal of Education and Human Development. 5 (3), 158 – 172. Retrieved February 10, 2020, from http://jehdnet.com/journals/jehd/Vol_5_No_3_September_2016/17.pdf

Ahmed, H. (2012). *The Impact of Public School Enrolment on Child Labour in Punjab, Pakistan.* The Lahore Journal of Economics. 1 – 34 (17:2). Retrieved May 5, 2020, from pdfs.semanticscholar.org/d806/ece37dfd5bcf0dfe8eadaced532b91cf8331.pdf

Ahmed, I. (1999). *Getting Reid of Child Labour.* Economic & Political Weekly . 34 (27). Retrieved December 11, 2020, from https://www.jstor.org/stable/4408158

Ahmed, S. (2011). *Trade-off between Child Labour and Schooling in Bangladesh: Role of Parental Education.* Retrieved May 6, 2020, from https://www.researchgate.net/publication/241761708_Trade-off_between_Child_Labour_and_Schooling_in_Bangladesh_Role_of_Parental_Education

Arjun (2015). *The Domino Effect: The Unseen Impact of Child Labour.* Retrieved October 22, 2020, from https://blog.akshayapatra.org/domino-effect-unseen-impact-of-child-labour/

Ashenfelter, O. and Krueger, A. (1994). *Estimates of the Economic Return to Schooling from a New Sample of Twins.* The American Economic Review. 84 (5). 1157 – 1173. Retrieved February 1, 2021, from https://www.jstor.org/stable/2117766

Backus, E. (2010). *Italy not Exempt from Child Labour Shame. ANSAmed*. Retrieved July 31, 2020, from http://www.ansamed.info/ansamed/en/news/sections/generalnews/2013/06/11/Italy-exempt-child-labour-shame_8853650.html?idPhoto=1

Basu, K and Van, P. H. (1999). *The Economics of Child Labor: Reply*. Retrieved December 20, 2020, from https://www.aeaweb.org/articles?id=10.1257/aer.89.5.1386

Bhalotra, S. (2003). *Child Labour in Africa. OECD Social Employment and Migration Working Papers*. Retrieved January 4, 2020, from http://www.unikassel.de/einrichtungen/fileadmin/datas/einrichtungen/icdd/Webportal/Publications/Decent_Work_and_Development/Child_Labour__An_Overview/Child_Labour_in_Africa.pdf

Blanc, C.S. (1994), '*Urban Children in Distress Global Predicaments and Innovative Strategies'*, Longhorn, Gordon and Breach Publishers

Boozer and Suri (2001). *Child Labor and Schooling Decisions in Ghana*. Retrieved September 1, 2020, from http://economics.yale.edu/sites/default/files/files/Workshops-Seminars/Labor-Public/boozer-suri-011005.pdf

Brivio, A. (2016). *Kayaye Girls in Accra and the Long Legacy of Northern Ghanaian Slavery*. OpenDemocracy. Retrieved September 24, 2020, from https://www.opendemocracy.net/en/beyond-trafficking-and-slavery/kayaye-girls-in-accra-and-long-legacy-of-northern-ghanaian-slavery/

Canagarajah, S. and Coulombe, H. (1997). *Child Labor and Schooling in Ghana*. World Bank Group elibrary. Retrieved December 24, 2020, from https://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-1844

Canarajah, S. and Nielsen, H. S. (1999). *Child Labour and Schooling in Africa. A Comparative Study*. Social Protection Discussion Paper Series. Retrieved January 11, 2021, from:

https://www.researchgate.net/publication/237967223_Child_Labor_in_Africa_A_Comparative_Study

Cartwright, K. and Patrinos H. A. (1999). *Child Labour in Urban Bolivia*. Retrieved May 10, 2020.

Clark, N. (2015). *Education in Kenya*. World Education News + Reviews. Retrieved May 15, 2020 from https://wenr.wes.org/2015/06/education-kenya

Cunningham, H. and Viazzo, P. P. (1997). *Child Labour in Historical Perspective -1800 – 1985.: Case Studies from Europe, Japan and Colombia*. International Review of Social History. 42 (463 – 465). Retrieved January 31, 2020 from https://doi.org/10.1017/S0020859000114403

Daniels, B. (2003). *Poverty and Families in the Victorian Era*. Retrieved September 10, 2020, from http://www.hiddenlives.org.uk/articles/poverty.html

Dubow, E. F., Boxer, P., and Huesmann, L. R. (2009). *Long-term Effects of Parents' Education on Children's Educational and Occupational Success: Mediation by Family Interactions, Child Aggression and Teenage Aspirations*. Merrill-Palmer Quarterly. 55 (3). 224 – 249. Retrieved January 11, 2021, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2853053/

Eastwood, R. and Lipton, M. (2007). *The Impact of Changes in Human Fertility on Poverty*. The Journal of Development Studies. **36** (1), 1 – 30. Retrieved January 16, 2020, from https://www.tandfonline.com/doi/pdf/10.1080/00220389908422609?needAccess=true

Edmonds, E. V. (2002). *Globalization and the Economics of Child Labour*. Retrieved September 3, 2020, from https://www.dartmouth.edu/~eedmonds/nzzessay.pdf

Ekundayo, O. S. (2018). *The Right to Free and Compulsory Primary Education in Ghana: Lessons for Other African countries*. Journal of Law, Policy and Globalization. Retrieved June 11, 2020, from https://pdfs.semanticscholar.org/b43a/5de05fecd05740c8ec50bc76d63789dcb0ea.pdf

Fabre, A. and Pallage, S. (2015). *Child Labour, Idiosyncratic shocks and Social Policy*. Journal of Macroeconomics. 45, 394 – 411. Retrieved December 28, 2020, from https://doi.org/10.1016/j.jmacro.2015.07.001

Forson, F. K. (2017). *Ghana Launches Free High School Education.* Voice of Africa. Retrieved August 20, 2020, from https://www.voanews.com/africa/ghana-launches-free-high-school-education

Giovetti, O. (2019). *How Does Education Affect Poverty? It Can help End It*. Concern Worldwide US. Retrieved November 1, 2020, from https://www.concernusa.org/story/how-education-affects-poverty/

Gray, P. (2008). *A Brief History of Education*. Psychology Today. Retrieved September 30, 2020, from https://www.psychologytoday.com/us/blog/freedom-learn/200808/brief-history-education

Greene, W. H. (2002). *Econometrics Analysis*. Fifth Edition. Prentice Hall. Upper Saddle River, New Jersey.

Grootaert, G. and Kanbur, R. (1995). *Child Labour: A Review*. Policy Research Working Paper. Retrieved September 1, 2020, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=620526

Haile, G. and Haile B. (2011). *Child Labour and Child Schooling in Rural Ethiopia: Nature and Trade-Off*. Education Economics. 20 (4). 365 – 385. Retrieved November 19, 2020, from https://www.tandfonline.com/doi/pdf/10.1080/09645292.2011.623376?needAccess=true

Hamenoo, E. S., Dwomoh, E. A. and Dako-Gyeke, M. (2018). *Child Labour in Ghana. Implications for Children's Education and Health*. Children and Youth Services Review. 93(1), 248 – 254. Retrieved February 3, 2020, from https://doi.org/10.1016/j.childyouth.2018.07.026

Hazarika, G. and Bedi, A. (2010). *Schooling Costs and Child Work in Rural Pakistan*. The Journal of Development Studies. 29 – 64 (39:5). Retrieved May 15, 2020, from https://www.tandfonline.com/doi/pdf/10.1080/00220380412331333139?needAccess=true

He, H. (2016). *Child Labour and Academic Achievement: Evidence from Gansu Province in China*. China Economic Review. **38** (130 – 150). Retrieved August 10, 2020, from https://doi.org/10.1016/j.chieco.2015.12.008

Heady, C. (2003). *The Effect of Child Labour on Learning Achievement*. World Development. 31 (2), 385 – 398. Retrieved December 28, 2020, from https://doi.org/10.1016/S0305-750X(02)00186-9

Holgado, D., Maja-Jariego, I., Ramos, I., Palacio, J., Oviedo-Trespalacio, O., Romero-Mendoza, V., and Amar, J. (2014). *Impact of Child Labour on Academic Performance: Evidence from the Program "Edùcame Primero Colombia"*. International Journal of Educational Development. 34. 58 – 66. Retrieved January 18, 2021, from https://doi.org/10.1016/j.ijedudev.2012.08.004

Human Movie Team (2018). *Slave Children of Fishing Boats in Lake Volta*. Retrieved February 29, 2020, from https://www.youtube.com/watch?v=x7oLf_RQ3Hc

Humanium (2010). *Child Labour in the World. Child Labour*. Retrieved November 5, 2020 from https://www.humanium.org/en/child-labour/

Hymer, S. (1969). *Economic Forums in Pre-Colonial Ghana*. Center Discussion Paper, No. 79. EconStor. Retrieved October 5, 2020, from https://www.econstor.eu/bitstream/10419/160011/1/cdp079.pdf

International Labour Organization (2018). *Causes of Child Labour*. Retrieved September 2, 2020, from https://www.ilo.org/moscow/areas-of-work/child-labour/WCMS_248984/lang--en/index.htm

International Labour Organization (2017). *Global Estimates of Child Labour*. Retrieved January 10, 2020, from https://www.ilo.org/wcmsp5/groups/public/---dgreports/-

dcomm/documents/publication/wcms_575499.pdf

International Labour Organization (ILO). *What is Child Labour?* Retrieved May 2, 2020, from
http://www.ilo.org/ipec/facts/lang--en/index.htm

IOWA Labour Center (2020). *Causes of Child Labour*. Retrieved September 10, 2020, from
https://laborcenter.uiowa.edu/special-projects/child-labor-public-education-project/about-child-labor/causes-child-labor

Irungu, P. (2018). *How free is Free Education I Kenya and Uganda?* Global South
Development Magazine. Retrieved January 31, 2020, from
https://www.gsdmagazine.org/free-free-education-kenya-uganda/

Kamran, M., Liang, Y., and Trines, S. (2019). *Education in Ghana*. Education System
Profiles. World Education News+Reviews. Retrieved November 15, 2020, from
https://wenr.wes.org/2019/04/education-in-ghana

Karas, D. (2019). *Child Labor in Decline: Life gets Better for 94 million Children*. The
Christian Science Monitor. Retrieved September 18, 2020, from
https://www.csmonitor.com/World/Progress-Watch/2019/0828/Child-labor-in-decline-Life-gets-better-for-94-million-children

Kelly, A. (2016). *Child Labour is Part of Most of What We Buy Today: What Can We Do?*
Spotlight on Africa. Retrieved January 5, 2021, from
https://www.theguardian.com/sustainable-business/2016/nov/24/child-labour-what-can-we-do-africa-modern-slavery

Kweifio-Okai, C (2015). *Five myths About Child Labour*. The Guardian. Retrieved March 4,
2020, from https://www.theguardian.com/global-development/datablog/2015/jun/12/five-myths-about-child-labour-world-day-against

Lucas, R. E. (1988). *On the Mechanics of Economic Development*. Journal of Monetary
Economics. 3 – 42. Retrieved January 9, 2020, from
https://www.parisschoolofeconomics.eu/docs/darcillon-thibault/lucasmechanicseconomicgrowth.pdf

Martínez, E. (2017). *Ghana Makes Secondary Schools Free*. Human Rights Watch. Retrieved May 15, 2020, from https://www.hrw.org/news/2017/09/18/ghana-makes-secondary-schools-free

Mull, L. D. and Kirkhorn, S. R. (2005). *Child Labour in Ghana Cocoa Production: Focus upon Agricultural Tasks, Ergonomic Exposures and Associated Injuries and Illness*. Public Health Reports. Retrieved May 20, 2020, from https://dx.doi.org/10.1177%2F003335490512000613

Michell, C. (2018). *Q&A: The Reality of Free Education for all in Ghana*. Retrieved December 24, 2020, from https://www.aljazeera.com/features/2018/2/25/qa-the-reality-of-free-education-for-all-in-ghana

National Archives (2017). *Teaching with Documents: Photographs of Lewis Hine: Documentation of Child Labor*. Retrieved August 22, 2020, from https://www.archives.gov/education/lessons/hine-photos

Pola, I. (2008). *Background History of Education in Ghana*. Education in Ghana. Retrieved February 11, 2020, from www.politicalpola.wikifoundry.com/page/HISTORY+OF+EDUCATION+IN+GHANA

Radcliffe, B. (2020). *How Education and Training Affect the Economy*. Investopedia. Retrieved December 9, 2020, from https://www.investopedia.com/articles/economics/09/education-training-advantages.asp

Radfar, A., Asgharzadeh, S. A. A., Quesada, F., and Filip, I. (2018). *Challenges and Perspectives of Child Labour. Industrial Psychiatry Journal*. 27 (1). 17 – 20. Retrieved January 2, 2021, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6198592/

Rajan, R. (2002). *Simultaneous Analysis of Child Labour and Child Schooling. Comparative Evidence from Nepal and Pakistan*. Economic & Political Weekly . 37 (52). Retrieved December 24, 2020, from https://www.jstor.org/stable/4413018

Rammohan, A. (2014). *The Trade-off between Child Labour and Schooling in India*. Education Economics. 22 (5). Retrieved May 5, 2020, from https://www.tandfonline.com/doi/abs/10.1080/09645292.2011.641271?scroll=top&needAccess=true&journalCode=cede20

Ravallion, M. and Wodon, Q. (2000). *Does Child Labour Displace Schooling? Evidence on Behavioural Responses to an Enrollment Subsidy*. The Economic Journal. 110 (462). Retrieved May 21, 2020, from https://doi.org/10.1111/1468-0297.00527

Riddell, A. (2003). *The Introduction of Free Primary Education in Sub-Saharan Africa*. United Nations Educational, Scientific and Cultural Organization. Retrieved May 15, 2020, from https://unesdoc.unesco.org/ark:/48223/pf0000146914

Ray, R. (2002). *The Determinants of Child Labour and Child Schooling in Ghana*. Journal of African Economies. 11 (4). 561 – 590. Retrieved January 1, 2021, from https://doi.org/10.1093/jae/11.4.561

Sackett, M. (2008). *Forced Child Labour and Cocoa Production in West Africa. Tropical Research Digest:* Human Rights and Contemporary Slavery. Retrieved December 5, 2020, from http://towardfreedom.org/wp-content/uploads/2012/01/africa.pdf

Sagemüller, I. (2019). *Student Retention: 8 Reasons People Drop Out of Higher Education*. U-Planner. Retrieved May 10, 2020, from https://www.u-planner.com/en-us/blog/student-retention-8-reasons-people-drop-out-of-higher-education

Tamborini, C. R., ChangHwan, K., and Arthur, S. (2015). *Education and Lifetime Earnings in the United States.* Demography. 52, 1383 – 1401. Retrieved November 12, 2020, from https://www.ssa.gov/policy/docs/research-summaries/education-earnings.html

Tienda, M. (1979). *Economic Activity of Children in Peru: Labour Force Behavior in Rural and Urban Context.* Rural Sociology. 44 (2). 370. Retrieved December 27, 2020, from https://search.proquest.com/openview/7e9484d64d42dafb75604fa9f48257a7/1?pq-origsite=gscholar&cbl=1817355

UNESCO Institute for Statistics (2021). *Gross Enrolment Ratio*. Retrieved January 21, 2021, from http://uis.unesco.org/en/glossary-term/gross-enrolment-ratio

United Nations International Child Emergency Fund (2019). *Child Labour*. Retrieved October 5, 2020, from https://www.unicef.org/protection/child-labour

United Nations Educational, Scientific and Cultural organization (2019). *Education in Africa*. Retrieved August 10, 2020, from http://uis.unesco.org/en/topic/education-africa

World Bank (2020). *Unemployment, total (% of total labour force) (modeled ILO estimate) – Sub-Saharan Africa, World*. Retrieved August 31, 2020, from: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=ZG-1W

The World Bank (2021). *Children in Employment, Total (% of Children Ages 7 – 14) – Ghana.* Retrieved December 11, 2020, from https://data.worldbank.org/indicator/SL.TLF.0714.ZS?locations=GH