

Faculté des bioingénieurs

Cocoa supply chain and child labour in Ghana

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DECLARATION

I declare on my honour that this dissertation is my own work, completed without unauthorised external assistance, that it has been submitted to no other institution for assessment, and that it has never been published, either in whole or in part. All the information (ideas, sentences, graphs, maps, tables, etc.) taken from or referring to primary or secondary sources are properly referenced using the current university method.

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LIST OF ACRONYMS

GLSS	Ghana Living Standard Survey
CGRs	Cocoa Growing Regions
NCGRs	Non-Cocoa Growing Regions
CGHs	Cocoa Growing Households
NCGHs	Non-Cocoa Growing Households
FCUBE	Free Compulsory Universal Basic Education
UNICEF	United Nations International Children's Emergency Fund
ILO	International Labour Organisation
NORC	National Opinion Research Centre of the University of Chicago
NGOs	Non-Governmental Organisations
IPEC	International Programme on the Elimination of Child Labour
COCOBOD	Ghana Cocoa Board
WFP	World Food Programme
GDP	Gross Domestic Product
GSS	Ghana Statistical Service

ABSTRACT

Child labour in the cocoa supply chain in Ghana has been a subject for various research amidst implementation of policies and programmes aimed at its eradication. However, it is not clear to what extent child labour is specifically linked to the cocoa supply chain, or whether it is related to broader welfare issues. This distinction is important as it requires different policy solutions to tackle child labour. Using the seventh round of the Ghana Living Standard Survey (GLSS7), this thesis compares child labour prevalence between cocoa growers and non-cocoa growers at the regional and household level. A binary logistic regression model and ordinary least squares were applied to examine determinants of child labour participation and child labour working hours for children aged 5–14. The findings from the descriptive statistics show higher percentages of child labour among children living in non-cocoa growing regions and households. Children living in rural areas and poor households constitute a larger portion of child labourers in Ghana. However, after controlling for child, parent, household and community characteristics in the regression analysis, children living in cocoa growing regions and households are more likely to participate in child labour. Other variables like age, education of children and their mothers, household poverty status and presence of educational infrastructure play a vital role in child labour participation and working hours in Ghana. It is recommended that poverty reducing initiatives and social protection programmes should target the rural poor not only in cocoa growing areas but in non-cocoa areas as well. Educational infrastructure should be extended to all parts of the country to compensate the efforts of the Free Compulsory Universal Basic Education.

1.0 INTRODUCTION

Recent estimates indicate that 160 million children throughout the globe are working as child labourers, with an increase of 8.4 million children from 2016 to 2020 (ILO & UNICEF, 2021). In addition, millions more are at risk as a result of jobs and income losses, cuts in remittances, rising levels of poverty and many other shocks from the effects of COVID – 19 (ILO & UNICEF, 2021). Child labour is defined as employment that denies children their youth, potential, and dignity, as well as a harmful effect on physical and mental development (ILO, 2007). Due to the global extent of the problem, SDG 8.7 set the goal to eliminate all kinds of child labour by 2025. In accordance therewith, multiple initiatives have been taken to prohibit this illegitimate activity in the regions of Sub-Saharan Africa, Northern Africa, Western Asia, Eastern and South-Eastern Asia, Latin America and the Caribbean, and Central and Southern Asia. However as a whole, Sub-Saharan Africa still has the most significant proportion of child labourers, representing 86.6 (23.9%) million children (ILO & UNICEF, 2021).

Based on the findings of some earlier research, child labour has been found to have several links with poverty (Aggarwal, 2004; ILO & UNICEF, 2021; Kar, 2018; Mondal et al., 2016; Sinha, 2019). It is widely documented that the structure of the economy, the dynamics of income, and the prevalence of poverty are all directly affected by child labour. (Anker, 2000; Basu, 1999; Chowdhury, 2020; Hazari & Mohan, 2021). Thévenon & Edmonds, (2019) infers that countries with greater poverty rates are more likely to have children working in their workforce, and the decline in child labour in countries that have made advances to end child labour during the early 2000s has coincided with a decline in the prevalence of poverty in such nations. Basu & Van, (1998) believe that child labour is a sign of poverty if it happens in large numbers (such as in the cocoa sector in West Africa). This is because when there is a lot of poverty, parents have to put their kids to work to make ends meet. This cuts into the amount of time children spend in school. Besides being an indication of poverty, child labour is also a contributing cause of poverty (Thévenon & Edmonds, 2019). As a result, families relying on child labour for financial support cannot achieve economic independence without their children's help. In homes with a higher income level, education is a need, not a luxury, and parents may appreciate the significance of children's education (Gunnarsson et al., 2009; Luckstead et al., 2019). It is reasonable to assume that child labour contributes inversely to a society's economic growth because of the dangers exposed to children working in the labour market (Patrinos & Psacharopoulos, 1995). However, according to Basu & Van, (1998) and Thévenon & Edmonds, (2019), children make up a third of a family's income and in very poor families, even small economic

contributions can have a powerful impact on the family's sense of wellbeing. Also, research finds that children's income from low-income homes cannot be disregarded. Some studies have shown that such revenue enables low-income families to better their lives and, as a result, to send their children to school (Patrinos & Psacharopoulos, 1997).

In Ghana, agriculture accounts for 19.25 percent of the national GDP (O'Neill, 2022) and many poor households depend on agriculture as their primary income source. Ghana's most lucrative crop is cocoa. It is the second-biggest cocoa producer in the world, after Cote d'Ivoire (Bangmarigu & Qineti, 2018). Out of the ten regions in Ghana, six are known to be cocoa-producing regions (Western, Central, Eastern, Volta, Ashanti, and Brong Ahafo regions). The cocoa industry supports over 800,000 Ghanaian families and their relatives (Danso-Abbeam et al., 2014).

Children have been used in cocoa production in Ghana since the 1930s when the cocoa growing sector became widely popular among farmers (Asamoah et al., 2018). The minimum working age under international labour standards is 15 years old. Accordingly, children under the age of 15 are not allowed to work in Ghana, as outlined in the country's 1998 Children's Act. However, children between 13 and 14 years old are allowed to perform simple tasks based on Ghanaian laws (GSS, 2019). But children under the age of 13 in Ghana are completely prohibited from engaging in any economic activity. Although these standards exist, experts, research institutes and NGOs including (Bass, 2022; Tulane University, 2015) have uncovered the widespread prevalence of child labour in cocoa-producing nations including Ghana. Tulane University, (2015) showed that in the 2013-2014 cocoa harvest season, 2.26 million children in Côte d'Ivoire and Ghana jointly worked in cocoa cultivation. Governments and international organisations have thus made several attempts to address the pervasive issue of child labour in Ghana's cocoa industry through legal actions, provision of social protection measures to the poor and the enforcement of free compulsory education. Also, many certifying bodies, such as the Rainforest Alliance (RA) and Fairtrade, have stepped up their efforts to address the issue. As part of their certification procedures, child labour standards serve as "non-tariff trade measures" for cocoa exporters prohibiting their certified members/companies from buying cocoa from producers using children. It is noteworthy that, all these interventions have played a part in helping to solve the problem, but there seem to be more to do.

Aside from the comprehensive National Opinion Research Centre (NORC) report by Sadhu et al., (2021) on the prevalence of child labour in the Ghana cocoa sector, research, including Adonteng-Kissi, (2018); Ansong, (2020); Hamenoo et al., (2018); Luckstead et al., (2019), have revealed child labour issues in specific regions and sectors of Ghana. Some studies (Afriyie et al., 2019; Baah, 2010; Owusu & Kwarteye, 2008) have gone further to identify some key variables that determine child

labour and its implications for children. They also mention various regions in Ghana that need particular attention and these regions include non-cocoa growing regions. However, there is limited research that have revealed the prevalence of child labour in non-cocoa growing regions (NCGRs). None of these studies have particularly made comparison on the prevalence and determinants of child labour between the cocoa growing regions (CGRs) and the NCGRs. In Ghana, the poorest regions, except for the capital (Greater Accra region), are regions that do not produce cocoa (UNDP, 2020). Most of these places are known for growing cereals. Many agricultural operations in these locations are labour-intensive, yet the topic of child labour is seldom addressed in studies. In research about child labour and child begging in Northern Ghana – a non-cocoa growing area, Fuseini & Daniel, (2020) mention the existence of severe child labour and child begging in this area and call for significant efforts to curb the issue. Therefore, there is a need to make the comparison between child labours in these two settings (CGRs Vs NCGRs). To add to the need for the comparison, research on child labour in Ghana tends to identify poverty as the root cause of child labour, although it is notable that the majority of Ghana's poorer areas do not grow cocoa. This raises an interesting question: to what extent is child labour related to the cocoa sector?

1.1 Purpose of research

To achieve policy improvements in Ghana that will enhance the all-inclusive fight against child labour in the country, detailed information on the determinants, prevalence and regions and sectors most affected is essential.

In order to analyse and get a clear overview of the issue, three main hypotheses are defined:

H₁: There is a higher prevalence of child labour in regions that do not produce cocoa

H₂: Children living in non-cocoa growing engage in more hours of child labour

H₃: Children in poorer households engage more in child labour

These hypotheses are tested using descriptive statistics, logistic regressions, and Ordinary Least Squares (OLS) estimations on nationally representative cross-sectional data, the Ghana Living Standard Survey (GLSS7).

1.2 Outline of research

The study is organised as follows: Chapter 2 provides an overview of the literature on the issues of child labour, its determinants and implications. In addition, the Ghana cocoa sector is reviewed, along with the specific problems of child labour in the country and the actions against child labour in Ghana. Chapter 3 presents a description of the study area, the data used and elaborates on the empirical and estimation technique while describing the variables used in the models. The chapter 4 reports the results and discussion of the analysis. Finally, the last chapter (5) presents the study's conclusion, recommendations, and limitations.

2.0 LITERATURE REVIEW

2.1 Child labour

2.1.1 Defining child labour and child work

Child labour is defined by the International Programme on the Elimination of Child Labour (IPEC), a Department of the International Labour Organisation (ILO), as “a kind of work that deprives children of their childhood as well as dignity and is damaging to their physical health and mental development”. It refers to labour that:

- is detrimental to children's mental, physical, social, or moral well-being; and/or
- competes with their education by denying them the chance to attend school,

demanding that they drop out of school early or push them to work long and hard hours in tandem with school (Ansong, 2020).

It is stated explicitly in the United Nations Sustainable Development Goals of 2015 that child labour should be eliminated (Target 8.7). However, it is predicted that 152 million children were employed in 2016, with 71% of them employed in agriculture (ILO, 2017). When considering these concerns, it is critical to distinguish between hazardous and non-damaging forms of child labour and work. An activity that integrates children into society and educates them about prevalent social conventions is deemed child work (Lieten, 2011). These often consist of little tasks that help with household chores and are seen as beneficial to the child's development into a responsible adult (Lieten, 2011). While CL – as defined by the ILO Convention – is employment that has the potential to cause damage to children. *Conditional* and *unconditional* work are two distinct forms of child labour that are distinguished and are not included by the WFCL (Worst Form of Child Labour) mandated by ILO convention 182. Child prostitution, trafficking, slavery, and child soldiers make up the latter and are all unlawful acts that should be quickly addressed if discovered. But the former, labour that is inherently dangerous for children's health, safety, morality, and/or development because of its very nature or the conditions in which it is conducted.

According to IPEC, the worst forms of child labour are those in which children are enslaved, removed from their families, placed in dangerous situations, or even left to fend for themselves on the streets of large cities (Hilowitz et al., 2004). Nevertheless, according to ILO criteria, home tasks, labour in family businesses, and education-related jobs are all exempt from the minimum age requirement. As a result, no matter how young the child is, the job they conduct does not fall under the category of child labour. National law may establish the minimum age for employment or employment at 14, 15,

or 16 if the employees engaged in light work do not fall under the afore-described area of child labour outlined by IPEC (Hilowitz et al., 2004).

The International Labour Organisation (ILO) reports that child labour is one of the world's most pressing issues. Nearly 79 million of the 218 million children ages 5 to 17 who work throughout the world do so in dangerous circumstances. This does not include children who work in the home. Child labour affects 160 million children, with 97 million males and 68 million girls, and 19% aged 5 to 14 (ILO & UNICEF, 2021). However, Sub-Saharan Africa (SSA) is the area with the highest prevalence of child labour, as well as the region with the slowest and least consistent development. This is shown in figure 1 where the highest percentage (23.9 %) of child labour is found in SSA. The next is 5.5% in central and south Asia, revealing a huge gap between the first and second and how severe the issue of child labour is in SSA.



Figure 1: Regional Prevalence of child labour

Source: (ILO & UNICEF, 2021)

Child work affects one-fifth of all African children, more than twice as many as in any other area, according to the Global Estimates of Child Labour. Of the world's regions, Africa is home to the most significant percentage of children who labour in dangerous conditions (ILO, 2017; ILO & UNICEF, 2021). In comparison to preliminary estimates, there were almost 13 million working children in the Arab world in 2012. However, no precise data enables the identification of the problem's actual scale (ILO, 2012, 2017). It is estimated that 70 percent of the world's child labour is employed in agriculture, and recent numbers revealed suggest that an extra four million children were dragged into child labour in agriculture between 2016 and 2020, with an estimated 112 million boys and girls working in agricultural industries (ILO & UNICEF, 2021). Farmers often employ children because

of a lack of capital-intensive equipment and the usage of labour-intensive technologies or because of a scarcity of adult labour during peak season (Sana & Jan, 2021). The number of economically engaged children aged five to fourteen in Africa is about one in three, compared to one in five in Asia and one in six in Latin America, according to Luckstead et al., (2019).

2.1.2 Determinants of child labour

According to the information in Figure 2, child labour is the result of a complex interplay between macroeconomic and microeconomic factors at the level of the individual, the parent, the family, the community, and the nation at large. Some child labour studies suggest that household variables are the primary predictors of child work (Cockburn & Dostie, 2007; Haile & Haile, 2012; Owusu & Kwarteye, 2008; Siddiqi, 2013). In contrast, others, such as Webbink et al., (2012) and Admaw & Ghosal, (2018), look at the influence of individual characteristics and consider them as the main determinants. According to Mudzongo & Whitsel, (2013), and Latif et al., (2020), community variables may also be the driving force for child labour.

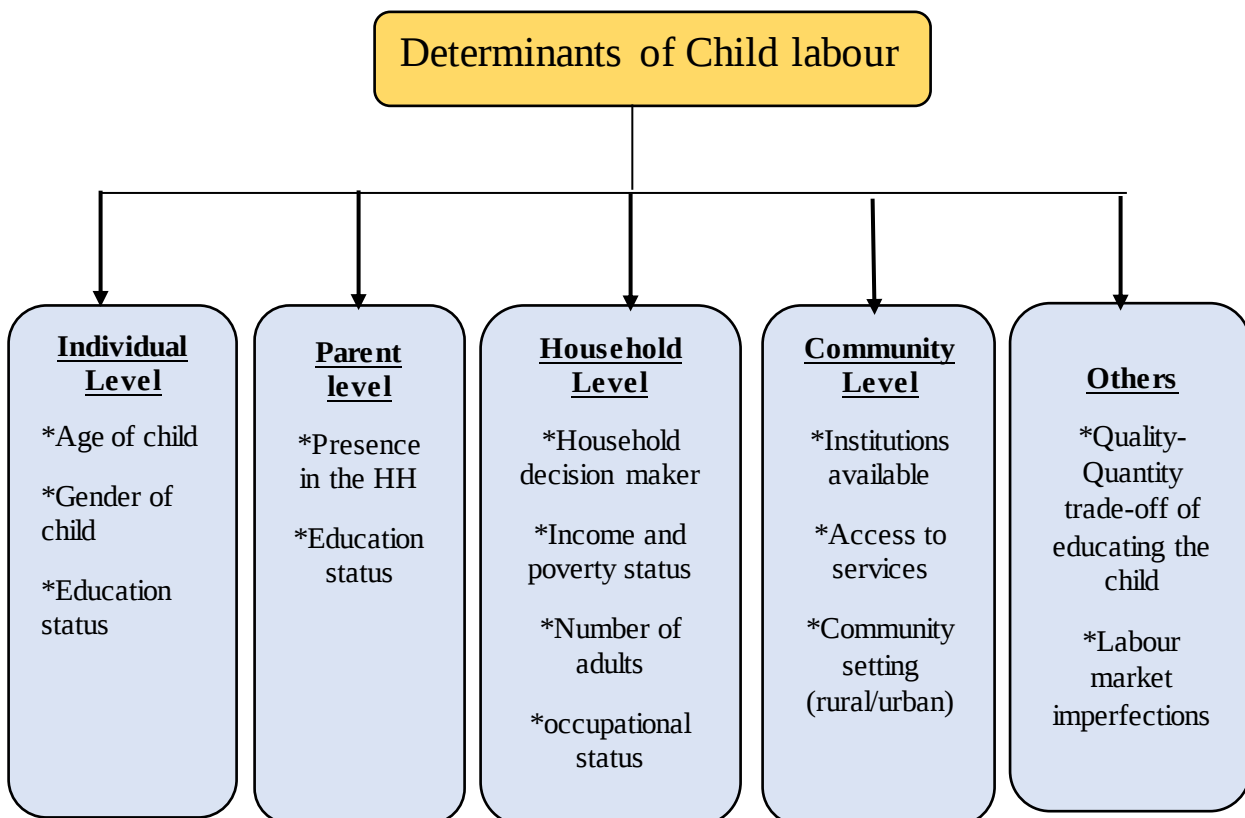


Figure 2: Conceptual Framework of determinates of child labour

Source: Own Construction based on Literature, 2022

To discuss these determinants, the study first presents the theoretical underpinnings of these variable arguments and reveals works that have been done in identifying the core issues. Then, a review of empirical results are presented to show how studies have tested these theories and the conclusions thereafter.

2.1.2.1 Theoretical underpinnings of the determinants of child labour

The theoretical work on child labour has established several variables and indicators that relate to the amount of child labour supplied in the market. Schultz, (1997) assumes that the household tries to get the most out of its utility by taking various household decisions, which depend on the number of children, the amount of schooling each child gets, the amount of free time each child has, the amount of free time each parent has, and a composite consumption good. These goods are made using a combination of a market-bought commodity and family members' time. To generate the composite consumption product, either parents or children might contribute their time. Selling things made in a home business or working as a wage labourer are two methods of generating cash for a family.

Other theories look at the quantity-quality trade-off of these children. Because of a mother's pay's effect on the number of children she can have, Rosenzweig & Evenson, (1977) allows this trade-off between quantity and quality to evolve naturally. When the mother's income rises, so does the opportunity cost of engaging in the labour-intensive endeavour of raising a family. As the number of children in the household decreases, more resources become available to improve the quality of the remaining children. There is a risk that parents will not have equal access to financial markets or understand the benefit of borrowing against future income even if their children's educations are comparable, according to Brown et al., (2002) resulting in where expenditure on the first and last children of a family will be greater than the average. According to Cigno & Rosati, (2000), families with limited financial resources cannot spend the return on their children's education until the child is employed and earning a salary. Younger siblings may benefit from increased investment in their human capital when their older siblings begin to earn a living.

Several hypotheses have suggested that bargaining failures may exacerbate child labour. As Becker, (1993) and Baland & Robinson, (2000) show, non-altruistic parents fail to invest in their children's human capital since the child is unable to pre-commit to repaying the loan made by their parent while at school. The distribution of household resources is often assumed to be the responsibility of one parent in theoretical models of child labour. As a result, the choice to send children to work is heavily influenced by family choices. For Ray & Basu, (2001), the link between the status of mothers in the house and child labour is not monotonic in terms of decision-making. They show that a household

with an even distribution of authority between parents is more likely to decrease child labour than one in which all of the decision-making resides with a single individual. According to Basu & Van, (1998), with the "luxury axiom", parents are expected to be altruistic when it comes to their children. Children are more likely to work if their parents are uninterested in their well-being. Even altruistic parents, however, may be forced to put their children to work due to financial hardships. Even when parents are altruistic toward their children, Genicot, (1998) shows that negotiating with the parent's employer may lead to child labour. For low-income families who are not getting enough nutrients, he says an employer can try to boost productivity by offering a larger salary. As a result of the increased wages, workers are expected to be more productive. However, if the worker has a family, part of the additional salary may be spent on boosting the household expenditure of non-working family members. As a result, the increased wage's promised productivity-boosting effects will not materialise.

Brown et al., (2002) also point out the essential consequences of a labour-market failure for child labour. He says that children's education should not be hindered no matter the landholding of the family if the labour and land markets are ideal. Nevertheless, a family with vast land holdings may utilise its children to work the land rather than invest in human capital if the labour and land markets are not working. Child labour can be caused by a labour market failure that is simultaneously accompanied by adult unemployment, according to Basu, (2000). As Ranjan, (2001) points out, when the return on education surpasses the forgone wages of a child, yet impoverished families with an illiterate head lack access to credit markets, child labour is more likely to be inefficient.

Basu & Van, (1999) say extensive child labour (as in the West African cocoa business) is an indicator of severe poverty. Poverty forces parents to put their children to labour, reducing school time. Child labour is a symptom and cause of poverty, making it harder for families to achieve financial independence (Guha & Kannan, 2000; Gunnarsson et al., 2009). Building on Basu & Van, (1999) article, Bhalotra, (2007) builds a model to see whether poverty forces parents to put their children to work. She says that a negative relationship between household income and child labour does not test the idea that poverty forces children to work. Instead, it tests the less controversial idea that children's leisure time is a normal good. A more exact criterion is required to assess whether or not child labour is warranted as a solution to poverty. Because of this, children would only have to work if their parents' income was insufficient to cover their basic needs. These children would strive toward a targeted income, which would cover the difference between their subsistence needs and their parent's income.

2.1.2.2 Empirical reviews of the determinants of child labour

To test some of these theoretical models, various studies on child labour have been published with an interest in the kinds of work children do, that could physically and psychologically harm them. These studies identified some determinants of child labour in different settings. To discuss these in perspective, the study structures the empirical review of these determinants according to various levels i.e. Child level, Parents level, Household level, Community level and Location, similar to the structure in figure 2.

First, the decision to participate in child labour was shown to be influenced by some of the children's individual characteristics. Mwebaze, (2007) identifies that the principal determinants of child labour at the individual level is the child's wage rate, *ceteris paribus*. He explains that there is a high probability for children to work when the wage rate is very high. However, it becomes difficult to make this claim when the work is unpaid. Brown et al., (2002) explain that in the event the child's work is remunerated, an increase in the child's wage works through several channels to raise the opportunity cost of time spent in school and thus, alters the amount of education.

Other variables that influence the decision to participate in child labour at the individual level include age, gender, and education. The age variable plays a role because Mwebaze, (2007) argues that, because they can be employed easily and are usually more able and stronger, older children are more likely to participate in the labour market than young ones. In a study by Nengroo & Bhat, (2017) on the carpet weaving industry in India, the authors find that children who join the industry are usually the oldest and range between 12 & 14, years.

Similarly, the gender of the child is a key determinant of the prevalence of child labour practices as shown in the research by Afriyie et al., (2019) in Ghana. Female children were nine percent less likely than male children to be forced into child labour. Girls are significantly more adept at doing household tasks than boys, and many of these estimates don't include this aspect of their lives. Even with an approximation of girls' participation in home tasks taken into account, (ILO & UNICEF, 2021; Rosati, 2022) show that various gender regression estimation results vary in different jurisdictions and the gender gap narrowed significantly. Giang et al., (2021), found that the gender and job status of a child aged 6–17 were statistically significant in similar research in Vietnam. When it came to boys, participation rates were much greater than those for girls.

Furthermore, children with a higher degree of education had a 30% lower chance of working than those with a lower level of education. This was a trade-off between going to school and engaging in the work market. To be able to complete their education, children who started working at an early

age were usually prevented from doing so (Giang et al., 2021). Education is critical to a person's overall well-being and progress. It has a significant impact on people's lives since it aids in the development of healthy lifestyle habits. The lowest school attendance rates are seen in the age categories of 5–17 (Tulane University, 2015). Importantly, children between the ages of 15 and 17 are the most likely to work in cocoa fields when compared to the other two age groups (Ansong, 2020). To corroborate the works of Mísra, (2004) who identified that low education levels are a massive determinant of child labour, Nengroo & Bhat, (2017), found that, more than half of the child labourers in the carpet industry in Kashmir never attended school. In fact, about 25% of them only attended to grade 5. In addition, Webbink et al., (2012) claim that lower levels of child labour may be predicted in places with a greater level of education since education is a necessity for accumulating human capital and better possibilities on the job market.

Second, at the parent level, the presence of both a father and a mother in the home is also linked to child labour practices. Afriyie et al., (2019) note that when the father was absent from the family, the risk of a child engaging in child labour practices rose by 5%, whereas the likelihood climbed by 12% when the mother was absent. According to research by Janssens et al., (2019) in Ghana, children whose mothers are present in the family and are engaged in non-farm business are much more likely to attend secondary education and hence less likely to participate in child labour. Using data from the Human Development Profile for India, which included 33,229 households in 1,765 villages in 16 Indian states, Congdon Fors, (2007) found that the more educated the parents were, the more likely they were to send their children to school. But, Chang, (2006) says when it came to the impact of parental education on a child's willingness to work, researchers discovered that the mother's education had a greater impact than the father's. According to Nengroo & Bhat, (2017), well-educated parents plan their families and ensure their children have access to the best educational and recreational opportunities. They pay attention to their children's nutritional and health needs and provide them with the love and care they need to grow and develop physically and mentally. According to their results, almost all child labourers had illiterate parents. In another study using data from the Philippines' 2001 Survey on Children 5–17 Years Old, Rickey & Jayachandran, (2009) found a substantial association between child labour and income in the Philippines. It has been shown that children less biologically linked to their parents are more likely than others to participate in paid jobs predicting that, more money is being spent on the education of biological children.

Third, a growing body of research has examined the relationship between child labour and household income, assets, and credit availability. With the pooled data from 1997 and 2000 of the Indonesia Family Life Survey (IFLS), Chang, (2006) examined the factors that influence child labour in

Indonesia. Precisely how much a child is likely to go to school or work was investigated using probit models and other independent factors (such as age, family per capita spending, and the average pay at the community level). According to these findings, the more money a family makes, the less probable it is that a boy will work. Likewise, data based on labour market variables were utilised by Fatima, (2017) to examine how the prevalence of child labour in Pakistan is determined. Adult income levels, the adult unemployment rate, and the size of the informal and agricultural sectors are proven to have a significant impact on the demand for child labour. In addition, the researchers discovered a positive correlation between the number of adults without jobs and the availability of child labour. Likewise, using a family economy model, Chakraborty & Chakraborty, (2019) evaluated the association between landholding and child labour in the case of manufacturing sector unemployment in India. According to the research, children's education worsens in the short term as their household's landholding becomes larger. Findings from Giang et al., (2021) also indicate that children aged 6–17 who lived in households with more economically engaged adults had a 21.2% greater chance of working.

Fourth, earlier studies by bodies like ILO, have connected rural areas of low and middle-income developing nations to child labour intensity (Putnick & Bornstein, 2015). Poverty and lack of access to education and other social services are at the roots of child labour in Ghana's cocoa-producing regions, as (Fountain & Huetz-Adams, 2018) pointed out. Other studies have examined the link between child labour and education, focusing on issues such as youth unemployment, child neglect, and the effectiveness of the educational system (Brown & De Cao, 2020; Chakraborty & Chakraborty, 2018; Cuadros-Menaca & Gaduh, 2019; ILO & UNICEF, 2020; Nengroo & Bhat, 2017). For rural communities, a severe problem in agriculture is the engagement of children, which not only perpetuates rural poverty but also restricts children's capacity to acquire skills and attend school, depriving them of fruitful career options in the future (ILO, 2017). The findings of Diallo, (2001) & Grootaert, (1998), imply that rural locations favour child labour due to a lack of educational infrastructure. Additionally, Webbink et al., (2012) found that in urban centres, transportation infrastructure is typically better and the state's influence is higher, which may lead to increased parental pressure to enrol their children in school. According to Mwebaze, (2007), the location and accessibility of employment opportunities may also have an impact on the availability of child labour. It is possible that in rural regions, where children work on the farm or engage in other activities for their family (such as bringing firewood and water to their homes), child labour may be greater than in cities. Also in rural settings, poverty rates are greater and education levels are lower than in large

cities. Landlessness, a high family size, belonging to a socially poor neighbourhood, and insolvent families all contribute to the prevalence of child labour (Aggarwal, 2004).

2.1.3 Implications of child labour

There is little doubt that child labour has devastating implications, according to the (UNICEF, 2021) report. First of all, many studies have examined how child work affects educational attainment in terms of enrolment, attendance or the number of years of schooling. When it comes to school attendance, some researchers have shown little to no negative consequences of child work, while others have indicated that child labour reduces the number of completed years of education (Amin et al., 2006; Mussa et al., 2019; Putnick & Bornstein, 2015; Zabaleta, 2011). However, a student's involvement in school or the number of years of education does not guarantee academic success; rather, it indicates how much time is spent in school (Gunnarsson et al., 2009). Lee et al., (2021) recommend that children's test results be used as a better indicator of the impact of child work on human capital accumulation. In the Nebbi District of North-East Uganda, Anumaka, (2013) found that child labour had a detrimental effect on children's academic performance. There were 2307 participants in the research, all of whom were studying for the Primary Leaving Examination (PLE), and it was discovered that many of the students who fared badly had been working. Additionally, in Brazil, Bezerra et al., (2009), discovered that children who worked seven hours or more per day had a 10% worse test score than pupils who did not work at all. Furthermore, a household survey by Heady, (2003) indicated an inverse link between Ghanaian child labour and low reading and arithmetic proficiency levels.

Second, several studies have focused on the impact of child labour on physical health factors. (Porter & Blaufuss, 2010) found that all street trades required children to carry heavy burdens on their heads, which had a negative impact on their physical health, including long-term biomechanical implications and risk of acute injury, as well as physical deficits (Porter et al., 2013). Working as a child has also been linked to health problems and car accidents (Omokhodion et al., 2006). Highway children (children working on highways) are more susceptible to these health issues due to the length of time they spend carrying large items while selling on the streets.

On the other hand, research on the impact of child work on cognitive performance in developing nations has just started, with limited literature so far on the topic. Studies generally show that child work hurts academic performance, although a few show that child labour has a negligible, and even favourable impact on learning. Standardized test results from numerous nations were utilized by

Delprato & Akyeampong, (2019) and Gunnarsson et al., (2006) to determine that child work reduces student learning success in Latin America. Children's academic success has been negatively affected by child work in several countries, including Brazil (Emerson et al., 2017), Ghana (Heady, 2003), Columbia (Holgado et al., 2014), Vietnam (Le & Homel, 2015), and Ethiopia (Woldehanna et al., 2017). However, according to Bezerra et al., (2009), working up to two hours each day has no detrimental influence on children's academic performance and children's learning is unlikely to be harmed by working for brief periods. Based on this, Basu & Tzannatos, (2003) claim that if we apply the incorrect definition of child labour, we may be misrepresenting the prevalence of child work worldwide. A revealing study by Dumas, (2012) indicated that Senegalese children's earlier work experience had a beneficial impact on their current verbal math performance. The study further says it is possible for children to gain some human capital via job activities such as trading or providing services that are measurable.

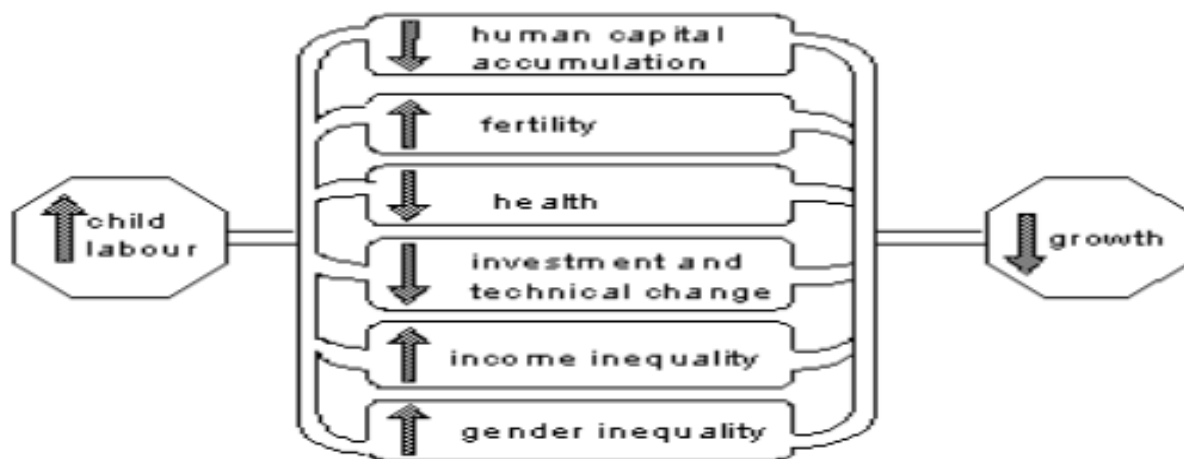


Figure 3: Child labour and economic growth & development

Source:(Galli, 2001)

Finally, on the economy, there are at least six ways in which child labour may harm long-term growth: weaker human capital accumulation, more fertility, worse health, slower investment and technological advancement, higher income, and gender inequality (Galli, 2001). As seen in figure 3, this argument says that measures of a country's social progress include human capital, health, and inequality. As a result, child work not only affects long-term economic growth but also directly impacts social development. In addition, since higher per capita earnings are associated with greater social progress, child labour may have a long-term impact on that progress.

(Edmonds & Pavcnik, 2005) purport that, when it comes to local labour markets, the implication of child labour is less complicated than the effect it has on children's lives. A shortage of employment and a surplus of employees will lead to lower salaries. The earnings of employment for which children compete tend to be low the more children there are working in the market (unskilled work). As a result, low pay and the necessity for child labour create a vicious cycle of poverty. Some studies show that those who work with children are more likely to be parents of children who also work with children. According to Wahba, (2006), the offspring of child workers are 10% more likely to become child labourers themselves if all other factors are equal. Children in Brazil are more likely to work if their parent was a child worker (Emerson & Souza, 2003). This makes addressing the problem and, as a result, addressing poverty very difficult.

2.2 Ghana Cocoa sector

2.2.1 Historical Development of Cocoa Production in Ghana

Ghana achieved its independence from the United Kingdom in 1957, at which time it formally became the Republic of Ghana. These four agro-ecological zones—savannah (including the northern Sudan savanna and Guinea savanna), transitional (including the forest-savanna transition), forest (including the semi-deciduous forest and rain forest), and coastal savannah—influence agricultural growth in the nation.

A review by Owusu-Amankwah, (2015) reveals that Ghana's coast was originally farmed with cocoa in 1815 by missionaries from the Netherlands, the United Kingdom, and Jamaica; the 11 Basel missionaries built the first cocoa plantation at Aburi in 1857. Ghana's first commercial cocoa field was established at Akwapim-Mampong, in Eastern Ghana, in 1879 by Tetteh Quarshie, who was born in Osu near Accra. In January 1893, two bags of cocoa beans were sent from the Gold Coast to Hamburg, Germany. A rise in output from 20,000 metric tonnes in 1908 to 41,000 metric tonnes in 1911 made the Gold Coast (now Ghana) the world's leading cocoa producer by the end of the twentieth century. Ghana contributed over 40% of world cocoa supply in the post-WWII era, with output ranging between 165,000 and 213,000mt (Quarmine, 2013) . In the 1940s, output fell to between 200,000 and 300,000 metric tonnes owing to a severe drought and the arrival of diseases and pests. This was due to the discovery of the cocoa swollen shoot virus in the east (Eastern Region).

As the world's top cocoa bean supplier, Ghana maintained its position in the 1960s thanks to the fast growth of agriculture and steps taken to improve the fields, including widespread spraying against capsids. In the 1964/65 season, national output surged to a new high of 580,000mt, giving Ghana a

33% share of world supply. Although forest land availability decreased, political instability persisted, and low producer prices exacerbated the decline in the late 1970s and early 1980s, the world's production of cocoa fell by about 10% (Hutchful, 1995; Knudsen, 2007). As a result, Cote d'Ivoire surpassed Ghana in 1978 as the world's top cocoa producer, with a contribution of about 40%. After Cote d'Ivoire, Ghana is now the world's second-largest cocoa producer (Bangmarigu & Qineti, 2018).

Since 2000, Ghana has been in production competing with other producing countries. As seen in figure 4, the trend of annual cocoa production in the three major world producers measured in tonnes shows that Ghana's cocoa production has been closely competing with Indonesia with some overlaps observed in 2005 and 2013. Ghana recorded its lowest production in 2002 of about 350 thousand tonnes but has had a steady increase in cocoa production since 2013 recording its highest in 2018 (almost 1 million tonnes). According to Angelucci & Asante-Poku, (2019), the government-owned cocoa marketing board COCOBOD might be partially responsible for this increase. Some of these interventions include higher prices at the farm gate, free programmes to get rid of pests and diseases, packages of hybrid seeds, fertilisers, insecticides, and fungicides, better marketing facilities, and fixing roads in cocoa-growing areas. The growth of the cocoa-growing region is another major consideration. Cote d'Ivoire has always since 2000, produced over a million tonnes and has continued to dominate the market. Currently, the world's largest producer of cocoa, Cote d'Ivoire, produces close to 2 million tonnes a year however, it is unclear how this has been affected by the COVID pandemic as the figure does not cover these years.

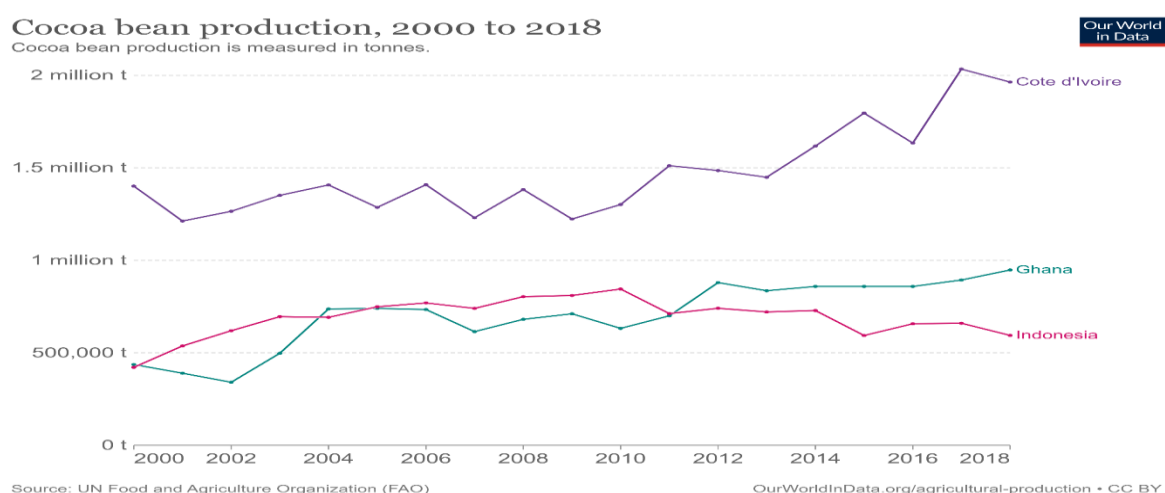


Figure 4: Cocoa Bean production trend from 2000 to 2018

Source: (FAO, 2020)

The Cocoa Marketing Board, established by the colonial master, is still in operation, thanks to government funding and backing. At this point in time, the Ghana Cocoa Board (COCOBOD) is in charge of the rest of the industry. Ghana is the only major cocoa-producing country that has not yet liberalised its cocoa-marketing system to its full extent (Kolavalli & Vigneri, 2011). The government of Ghana privatised input distribution and restructured extension services in 1991 in order to liberalise internal marketing to some extent (World Bank, 2011).

Cocoa beans from Ghana are sold and exported only by COCOBOD, and the farm-gate price of cocoa is set each year in conjunction with important stakeholders, such as farmers' representatives, before the start of the cocoa season (October). Before releasing the price it may provide farmers for the whole crop year, it takes into consideration the global price. To ensure that prices are consistent with the futures markets in which cocoa has been sold in Ghana since 1992-93, they must be established in line with them (Owusu-Amankwah, 2015).

Finally, COCOBOD helps farmers with phytosanitary issues and oversees the export of Ghanaian cocoa in bulk to other countries. In order to keep Ghanaian bulk cocoa's quality high on the international market, Owusu-Amankwah, (2015) claims a premium of 7-10% above the price paid for other West African bulk cocoa has been established.

2.2.2 Livelihoods of cocoa farmers in Ghana

Poverty reduction in the nation, especially in rural areas, is due mainly to the growth of cocoa in the southern region (Peprah, 2015; Vigneri & Santos, 2007). Because so many small farmers are engaged in cocoa farming, there is a need to examine the independent livelihood (cocoa farming) critically. Ghana's cocoa cultivation is labour-intensive due to the country's mostly peasant population and the fact that the majority of the crop is grown in subsistence farming settings (Owusu-Amankwah, 2015). Farmer organisations are weak, production is low owing to pests and disease and a lack of understanding of optimum agricultural practices are among the many issues facing the sector despite several interventions. In addition, there is a lack of financial resources for farmers to purchase inputs (Baah, 2010). Cocoa farmers are abused by cocoa purchase clerks in terms of cocoa bean weighing scale modification, under-invoicing, and cheating on incentive payments to farmers as shown by Baah et al., (2012). Farmers are unable to buy pesticides and fertiliser to combat pests and illness, which has resulted from unsustainable agricultural techniques over the years, as a result of this poor revenue (Hainmueller et al., 2011).

In some places, illegal small-scale gold and diamond mining negatively impact cocoa growth due to land use conflicts between the two livelihoods. Short-term, high-return land uses such as mining are always the preferable choices, because of the inherent advantages of mining (Boateng et al., 2014). Low cocoa yields in Ghana, according to Bosompem et al., (2011), may be attributed to a variety of factors including depleted soils, disease, unpredictable rainfall patterns, and unsustainable agricultural practices. The fact that the majority of cocoa growers only have minimal education (e.g., elementary school and adult literacy) adds to the difficulties. Agricultural extension and new technology are hindered by farmers' lack of knowledge, according to Codjoe et al., (2013). Although radio and television are excellent sources of information for cocoa growers, farmer-to-farmer contact is the most popular (Codjoe et al., 2013). Government policy may also be favourably or adversely swung when farmers get favourable pricing or when the government raises the tax component rather than price (Kolavalli et al., 2012).

This cycle of farming methods that aren't sustainable is bad for the environment and threatens the future of cocoa farming. Farmers' income diversification is one solution to this problem. Even while cocoa remains the primary source of income for most farmers, they are starting to diversify their businesses into non-cocoa-related activities and enterprises, according to Owusu-Amankwah et al., (2017). Smallholder farming in Ghana has historically included both subsistence farming for the family and commercial production of cocoa for the market. Many studies have shown that although cocoa farmers regard the crop as a reliable source of income and cocoa is still the primary source of income for most cocoa farmers, they also look for other kinds of income (Baah, 2010; Hill, 1997; Knudsen, 2007).

2.2.3 Labour Requirements and Sources in Cocoa Production in Ghana

Producing cocoa in Ghana requires a lot of manual labour due to the country's mostly peasant population and the fact that much of the country's agriculture is subsistence-based (Asamoah et al., 2018). The planting phase of a cocoa agroforestry system is projected to need 206 person-days per hectare, whereas a full-sun monoculture requires 217 person-days (Owusu-Amankwah, 2015). Cocoa growers have relied on a variety of kinds of labour to help them carry out their productive activities because of the industry's labour-intensive nature.

As a rule of thumb, the farm's whole labour requirements are met by the farmer's family, which includes the farm's children (Owusu-Amankwah, 2015). Caretakers (*nhweso*), paid labour, or cooperative labour assistance fill up the rest (*nnoboa*). Caretakers, day labourers, or contract

employees may also be employed. In order to complete any given task, a farmer's labour requirements are dependent on an assortment of elements. There may be fewer or no large trees to be felled in secondary forest, therefore clearing it for a cocoa plantation will take more time and effort than clearing virgin forest (Owusu-Amankwah, 2015). As a result, the number of labourers needed to harvest, collect, and stack cocoa pods from a hectare of the cocoa field is heavily reliant on the farm's performance. Labour requirements increase as production increases, and vice versa. Sharecropping is used in the establishment of cocoa fields in Ghana when the caretaker utilizes his own resources, including seeds and labour, to get the farm up and running. The land is divided into half (*abunu*) shares once it reaches fruit yielding stage. In the *domayenkye* system, the landowner, as in the case of *nhweso*, lives away from the farm (Owusu-Amankwah, 2015). *Domayenkye* is a mechanism most Ghanaian farmers use to purchase their land (Knudsen, 2007). *nhweso* and *domayenkye* operators may also hire contract workers, who work for a minimum of one year, or day labourers to help with their operations.

2.2.4 Child Labour in the Cocoa Sector

Cocoa growing is an important component of a household's overall agricultural livelihood plan (Sumberg et al., 2012). Rural areas had a higher proportion of children working in agriculture (87.5%) than urban areas (50.8%) (GSS, 2014). Rural savannah and rural forests had higher percentages of children working in agriculture (93.7% and 84.3%, respectively) than rural coastal (74.2%) (GSS, 2014). Compared to other Ghanaian children, children in rural regions are more economically active at a younger age, with 70 percent of children between the ages of 5 and 9 participating in some type of agricultural work (Abenyega & Gockowski, 2003). During the Ghanaian cocoa season, agricultural workers are particularly needed.

Many academics and organizations have reported children's involvement in the cocoa-producing process (Bass, 2004; Sadhu et al., 2021; Tulane University, 2015). Two million children labour in the cocoa industry in Ghana and Ivory Coast, the world's two major cocoa producers, according to Oakes, (2019). One of the first stages in passing on obligations to the next generation in the farmer's family is including the younger members of the family in agricultural activities. The government of Côte d'Ivoire and Ghana, however, has found that too many children are involved in harmful agricultural activities, including using unsafe agricultural implements or engaging in the application of pesticides (Senou et al., 2019). When these children aren't in school, they get injured or sickened while working in the fields. Working for 100 hours a week and being physically abused is not uncommon for some children (Senou et al., 2019). Before harvest (land preparation and planting),

during harvest (cocoa picking activities) and post-harvest drying (bean transportation) may all be clearly distinguished in the cocoa supply chain's activity (Asamoah et al., 2018). In the cocoa industry, children might be exposed to a variety of dangerous labour conditions (Tulane University, 2015). An example of a physical or health danger might be: using machetes, moving cocoa pods, and being exposed to pesticides and agrochemicals (Asamoah et al., 2018; Thorsen, 2012; Tulane University, 2015). According to a quick evaluation by the (ILO, 2017), the most prevalent physical injuries suffered by children working in cocoa production are cuts from machetes or contact with sharp branches and twigs on the farm and the sharp edges of harvesting instruments. These severe difficulties faced by children in Ghana cocoa sector have raised various eyebrows and have point both government and non-governmental attention to solving the problem.

2.2.5 Actions against child labour in the cocoa sector

In Ghana, there are laws in place to ensure that children's rights are protected. Furthermore, Article 28(2), Ghana's Constitution states that "Every child has the right to be safeguarded from participating in employment that represents a harm to his health, education or development." The Ghanaian Parliament approved the Children's Act in accordance with Article 28(1) of the constitution, which mandated that a law protecting children's rights be passed (1998). In accordance with Section 87(1&2) of the Children's Act (1998), "No individual may involve a child in exploitative labour." A child is exploited by labour if it denies the child access to health, education, or opportunity for growth.' Child work at night is likewise outlawed under Section 88 of the 1998 Children's Act. (It is illegal to employ children between the hours of 8 pm and 6 am). However, despite Ghana's legislative limitations on child labour and its compliance with ILO standards, children are still employed in the country's economy (Tulane University, 2015). Given Ghana's constitutional and legislative protections for children's rights, the prevalence of child labour, particularly in the cocoa industry, continues unabated (Ansong, 2020). This demonstrates the difficulties of relying entirely on local legislation to address issues at home and the potential benefits of employing international measures within the framework of the WTO. Other non-legal or "soft law" measures to tackling the issue of child labour come from the cocoa subsector's private sector efforts, notably UTZ & Rainforest Alliance (RA) and Fairtrade. Almost all of these actions have concentrated on the cocoa industry, as seen in table 1.

Table 1: Certifications schemes and their guidelines against child labour

Scheme	Child labour definition	How they tackle child labour	Source
Fairtrade	The term "child labour" refers to any employment that has a negative impact on a child's health and well-being, as well as their ability to learn, play, and grow.	• Children under the age of 15 are not employed by Fairtrade organisations. • Children under the age of 18 are prohibited from engaging in any activity that might compromise their education or upbringing. • For the most part, children are not permitted to work on family farms. They cannot undertake this task during school hours or on weekends; it has to be age-appropriate. • Small producer groups are urged to incorporate a strategy for mitigating and eliminating child labour in their Fairtrade Development Plan in areas with a high possibility of child labour. • Identifying child labour as a danger necessitates putting policies and procedures in place to keep children out of harm's way	(Fairtrade, 2020)
UTZ-Rainforest Alliance (RA)	When a child is too young to conduct a risky or harmful job, or if the employment prevents the child from going to school, it's called "child labour." International law sets a minimum working age of 15 years old (14 for some developing countries). Children above the age of 15 may only work for a total of 48 hours per week in non-hazardous jobs.	• No one under the age of 15 is employed in any capacity. • Under-18s are prohibited from engaging in heavy or dangerous activities and those that might put their bodily, mental, or moral well-being at risk. • In smaller farms owned by families, children are permitted to assist, but only under certain conditions: the job must not interfere with school, it must not be physically strenuous, and an adult relative must always accompany it. • All forms of forced, bonded, or trafficking labour are prohibited	(Ansong, 2020; Rainforest Alliance, 2021)

Source: Own Construction based on Fairtrade, 2020; Ansong, 2020; Rainforest Alliance, 2020.

Note: UTZ and Rainforest have merged since January 2018.

As a result, participants in the programme have an incentive to adhere to the program's standards and regulations. Farmers may be decertified if they don't follow the rules, in which case they would lose

their premium price from the certification programme (interview with UTZ (Rainforest Alliance) Field Auditor, 2019). Preferential treatment for UTZ-certified farmers' cocoa is a beneficial step toward alleviating poverty, contributing to the widespread use of child labour in the chocolate industry. The criteria themselves are also monitored in a variety of ways. These guidelines from (Rainforest Alliance, 2021) include:

- **Comminatory Monitoring:** It is important to conduct exploratory trips and discussions with community leaders, particularly women, youth, and religious organisations, in order to get a better knowledge of the hazards of child labour and the probable fundamental causes. Then, you may focus on medium and low-risk populations.
- **Household Monitoring:** Child labour, including domestic work and livestock herding, may be detected by families, but the primary strength of this approach is that it can lead to parents reporting instances of child labour. There are a variety of home security systems in use:
 - Selecting at-risk homes, including vulnerable impoverished and illiterate families, female and child-headed households, and migrant and refugee communities, using risk-based sampling. Including landless households that work in agriculture or have working children is beneficial. Child labour may be traced back to the origin of the problem.
 - Community-based sampling: In order to do a community-based sample, you must visit all of the people in the communities where your farmers work or reside. The percentage of homes at risk of child labour is useful since it presents a broad picture.
 - Member-based sampling: visiting households of your target farmer group; is a low-cost alternative to community sampling, albeit it may miss some of the most vulnerable farm families. This method gives a good idea of how many members are in danger of child labour.
- **School monitoring:** School visits are increasingly becoming part of child labour monitoring due to the significant association between school attendance and child labour. A kid enrolled in school does not indicate that he or she is not engaged in child labour, since a considerable percentage of child labourers mix their job with their education. The importance of establishing connections with instructors cannot be overstated.

3.0 METHODOLOGY

3.1 Study site

The research focuses on Ghana. Located on the coast of the Atlantic Ocean and the Gulf of Guinea, the nation is part of West Africa. With a population of 30.8 million people in 2021, the nation occupies a total land area of 238,535 sq. km (GSS, 2021). The nation's western border is shared with Cote d'Ivoire, its northern border with Burkina Faso, its eastern border with Togo, and its southern border with the Gulf of Guinea and the Atlantic Ocean.

Despite Ghana's status as a lower-middle-income country (World Food Programme, 2020), the country has made significant steps towards democracy over the last two decades, thanks to a multi-party system and an independent judiciary that has gained popular confidence (World Bank, 2022). Overall GDP growth in 2017–19 was 0.4% due to the effects of COVID-19, the March 2020 shutdown, and a precipitous drop in commodity exports (World Bank, 2022). Households were significantly affected by the economic downturn. According to current estimates, the poverty rate will rise from 25% in 2019 to 25.5% in 2020 (World Bank, 2022). The COVID-19-caused decline in Ghana's GDP has been partially reversed. Forecasts indicate that the economy will expand by 4.1% in 2021, 5.5% the next year, and 6.1% the year after that. (World Bank, 2022).

Cocoa is farmed in Ghana's forested areas, such as Ashanti, Brong-Ahafo, the Central Region, the Eastern Region, the Western Region, and Volta, as illustrated in Figure 5. Over the last four years, the Western Region has supplanted the Ashanti as Ghana's top cocoa-producing region, generating more than half of all annual production (Grossman-Greene & Bayer, 2009). These regions get between 1,000 and 1,500 millimetres of rainfall annually, which is ideal for cocoa cultivation (Tabaro, 2012). The main crop is purchased in October, while the mid-crop cycle starts in July. October marks the beginning of the cocoa season (Tabaro, 2012). The Cocoa Marketing Board buys all cocoa except those that have been smuggled out of the nation (Kolavalli et al., 2012). Despite the fact that most cocoa is grown by smallholder farmers on plots no larger than three hectares, a small group of these farmers seems to be in charge of the bulk of the trade (Kolavalli et al., 2012).

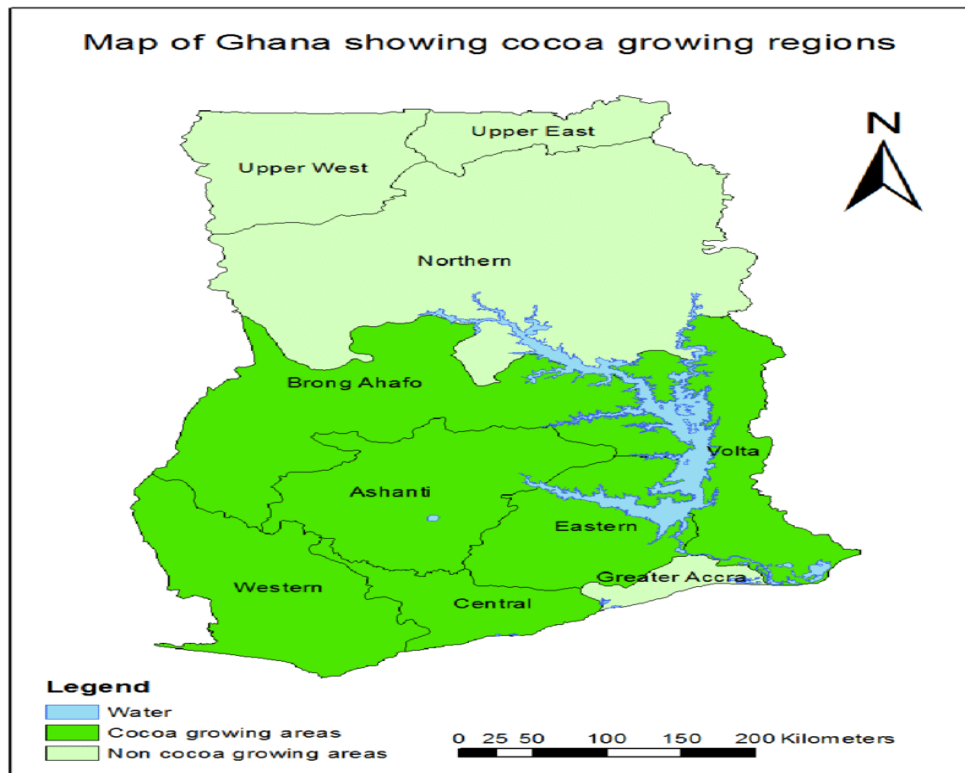


Figure 5: A map of Ghana showing Cocoa Growing Regions and Non-Cocoa Growing Regions.

Source: (Wainaina et al., 2020)

3.2 Data Description

This study used the 7th round of the Ghana Living Standards Survey (GLSS7). The survey was implemented between October 2016 and October 2017. Accurately estimating the living standards of Ghanaian households and people has been a primary goal for the Ghana Statistical Service since 1987. It enables analysis to be conducted on the basis of the following classifications: urban/rural area, region, and socioeconomic status like poverty, employment including issues of child labour.

The sampling strategy entails two stages. First, enumeration areas (EAs) are selected using a probability proportionate to population size based on the 2010 census (number of households). Second, systematic sampling methods are used to choose fifteen homes in each EA. There are likely to be changes in the number of households in EAs over time, therefore two-stage sampling would not generate a self-weighted sample (which seeks to afford every household equal chances of being included) due to the lengthy gap between GLSS7 and the 2010 Census. Because of this, the EAs' selection might be affected by their genuine sizes. GLSS has derived weights indicating the unequal probability of selecting households in various EAs to overcome this sampling problem (GSS, 2019).

Consequently, weights that take into consideration sample size and response rate are employed to estimate descriptive statistics and cause-and-effect relationships. There are 1000 main sample units (438 in rural areas and 562 in cities) in the GLSS7, and 15,000 households (8,430 in rural areas and 6,570 in urban areas) in the study. The poll had a 93.4 percent response rate of 14,009 houses and 59,864 people. Only 48.4 percent of the sample is male and 51.6 percent is female.

Additional sections on mortality, food security, and data privacy were added to the questionnaire used in the sixth round (GLSS6). For this study, a variety of questionnaires were used to provide a comprehensive insight into how people's socioeconomic situation differed from that of their neighbours. Modules A through D were included in the Household Questionnaire's four sections. Module A is divided into seven sections: demographics, education, health, fertility, employment, migration, tourism, information and communications technology (ICT), housing, and mortality and anthropometry. All aspects of agriculture, household consumption, income transfers, migrations and remittances are addressed in Module B. Module C contains Section 10 of the survey where workforce employment; wages; material expenditures; product value; income; spending; assets; consumption; savings; and other non-farm business variables are collected. Module D of the household survey inquiries about issues of law enforcement, public safety, and personal information privacy (Section 13). Theft, robbery, sexual offences, violence, safety, social cohesiveness, political involvement, and privacy and data protection are all discussed in this area, along with government, peace, and security. (GSS, 2019).

As mentioned before, the minimum working age for child employment is set at 15 years by international labour standards. More specifically, in Ghana, children under the age of 15 are not allowed to work, according to the country's 1998 Children's Act. However, there is some light labour that can be done by children aged 13 and 14. Ghana defines child labour as "children (5-14 years) who were engaged in some economic activity for pay, profit or for family gain, for at least one hour". As a result, children under the age of 13 are not permitted to participate in any kind of commercial activity (GSS, 2019). In order to address the research question of this thesis, we restricted the population of interest to children aged 5 to 14 in both rural and urban settings. This resulted in a sample of 20,113 children across the country. Each child was asked whether they had been involved in any form of "economic activity for pay, profit or for family gain, for at least one hour" (GSS, 2019) in the past seven days.

3.3 Econometric Models

3.3.1 Dependent variables and main variables of interest (cocoa variables)

Our main econometric model specifically looks at to what extent child labour in Ghana is related to cocoa production, and is represented by the following equation:

$$Y_{ijk} = \beta_0 + \beta_1 CV_{ijk} + \beta_v X_{ijk} + \varepsilon_{ijk} = \beta_0 + \beta_1 CV_{ijk} + \beta_2 C_{ijk} + \beta_3 P_{ijk} + \beta_4 H_{jk} + \beta_5 Q_k + \varepsilon_{ijk}$$

Where Y_{ijk} is a variable indicating the child labour status of child i in household j in community k , CV representing our main variable of interest of cocoa production, a set of control variables (X), which include child characteristics (C), parent characteristics (P), household characteristics (H) and community characteristics (Q), and an error term ε .

We use two different specifications for child labour. First, we specify child labour as a binary variable measured as 1 if the child is engaged in economic activity for pay, profit, or for family gain in the past 7 days or not (0). Second, we use the number of working hours that a child spent on any economic activity during the past seven days. We also use several specifications for cocoa production named "cocoa variables": 1) a dummy if the child lives in a Cocoa Growing Region (CGRs) 2) a dummy if the child lives in a household involved in cocoa production, 3) total household income derived from cocoa 4) the logarithm of total income from cocoa, and 5) share of total household income that is derived from cocoa production.

Apart from the cocoa variables, the characteristics of the child, parent, family, and community are selected. The child's sex, age and age squared, a dummy indicating if the child is in school or not, a dummy indicating whether the child is an orphan or not (have neither of the parents in the household), and the number of siblings younger and older than 5 are all included in the child characteristics (C). The age of the mother and father, as well as dummies indicating whether or not they are educated, and dummies indicating whether or not they are present in the family, are all included in the parent characteristics (P). The size of the household's land holdings, a dummy for the household's polygamous status, a dummy for the gender of the household's head, a dummy for the household's involvement in livestock production, a dummy for the household's involvement in mining, and a dummy for the household's ownership of a non-farm enterprise (NFE) are all considered household characteristics (H). Principal component analysis is used to create a household asset index, which measures the standard of living in a certain household (Filmer & Pritchett, 1999), based on variables captured in GLSS7 data. It may be used as an indicator of permanent financial stability, household income, or poverty status. The index contains information on the kind of housing, the floor, wall, and roof materials, as well as the possession of furniture, automobiles, and electrical items, etc. The model

also incorporates numerous community characteristics (M), including the distance to a motorable road, the availability of a primary school, the presence of a junior high school, and a dummy that indicates whether the community is rural or urban¹. Finally, the study includes the ecological zone and region in which the child lives.

3.2.2 Logit regression and OLS

The household utility model serves as the theoretical framework for this research. This model assumes that the family chooses a certain child activity because it provides value to the household. According to Strauss et al., (2000), a unitary household model predicts that household "h" would pick an alternate source of "j" if the utility gained from using "j" is larger than the utility gained from any other usage. In this instance, it is believed that, the household choice about their children's education and employment are autonomous. A vector of child, parents, household, community characteristics, as well as community, ecological zone and regional dummies are used to calculate the household's decision. The simplified econometric model is outlined below.

The decision to send a child to work is described by the following latent variable model:

$$W_i^* = X_{1i}\beta_1 + \varepsilon_{1i}$$

where W_i^* is the net benefit attained by the family by sending the child to work, X_{1i} is the vector of child, parents, household, community characteristics, as well as community, ecological zone and regional dummies that determine W_i^* , and ε_{1i} is the random error, with zero mean and unit variance. However, W_i^* is not observed. What is observed is the following binary variable:

1, if the child worked in the last 7 days

0, otherwise

The empirical determinants impacting child labour in Ghana are examined using the binary logistic regression model (Afriyie et al., 2019; Awaworyi Churchill & Mishra, 2017; Das, 2022; Giang et al., 2021; Mishra & Smyth, 2015) and further elaborated. "Cocoa variables" and "control variables" were employed as predictors of the binary outcome variable (child labour status, yes/no). The extended logistic regression model can be defined as:

$$p(Y_{ijk} = 1|X_{ijk}) = \beta_o + \beta_1(CV)_{ij} + \beta_2C_{ijk} + \beta_3H_{ijk} + \beta_4P_{ijk} + \beta_5Q_{ijk}$$

¹(Tabachnick & Fidell, 1996) state that multiple regression should exclude independent variables with bivariate correlations higher than 0.70. However, while some of the control variables are associated, all bivariate correlations are below that value.

where $P(Y = 1|X)$ represent child labour status, probability of being in child labour, α is the intercept parameter, and β_i is a vector of regression coefficients related to specific independent variables that are typically estimated by the maximum likelihood (ML) method (Aidoo et al., 2013; Park, 2013) apart from the Logit model, with the use of a linear multiple regression model, it is possible to identify and quantify the factors responsible for the prevalence of child labour. Child labour's working hours are modelled as a dependent variable in a regression model, with independent factors being the "cocoa variables" and the control variables already mentioned.

4.0 RESULTS AND DISCUSSIONS

The first part of this section presents summary statistics on child labour in Ghana, in rural communities only and in rural communities in cocoa growing regions. Additionally, *ttests* have been run for all the variables by groups (children in CGHs and children in NCGHs). The results of this *ttests* showing the various significant levels are captured in the appendix. The second part shows the regression results, presented and interpreted accordingly.

4.1 Descriptive statistics

4.1.1 Variable definition and summary statistics

Table 2: Definition of main variables and control variables used in the regression

Variables	Definition	Mean	SD.
<i>Dep. Variables</i>			
Child Labour 7d	Dummy variable indicating if child is employed (Child labour) in past 7 days (1) or not (0)	0.132	0.339
Child labour 7dhrs	Number of hours child worked in past 7 days	13.490	12.893
<i>Main Indep. Vs.</i>			
CocoaRegion	Dummy variable indicating if the child is living in a household located in cocoa growing region (1) or not (0)	0.657	0.475
CocoaProdHH	Dummy variable indicating if the child is living in a household involved in cocoa production (1) or not (0)	0.107	0.310
CocoaIncome	Total value of income derived from Cocoa production for households producing cocoa in GH¢	1594.250	4088.356
LogCocoaIncome	A log of Total value of income household derives from Cocoa production in GH¢	2.965	3.831
Cocoashareincome	Share of household income derived from cocoa in decimal	0.016	0.102
<i>Control Variables</i>			
<i>Child level</i>			
Age	Age of the child	9.455	2.867
Age squared	square of the age of the child	97.610	54.645
Sex of child	Dummy variable indicating if child is female (1) or male (0)	0.476	0.499
Number < 5y	Number of siblings less than 5 years old	0.682	2.712
Number >= 5 y	Number of siblings more or equal to 5 years old	6.265	7.302
Childschool	Dummy variable indicating if child is in primary school or junior high (1) or not (0)	0.726	0.446
Orphan	Dummy if both parents are absent in the hh (1) or not (0)	0.118	0.322
<i>Father level</i>			
AgeFather	Age of the father in years	29.142	22.704

HH Presence	Dummy variable indicating if father is present in HH (1) or not (0)	0.644	0.479
Father Educ	Dummy variable indicating if the highest qualification of the father is at least primary school(1) or not (0)	0.241	0.428
<i>Mother level</i>			
AgeMother	Age of the mother in years	32.169	16.022
HH Presence	Dummy variable indicating if mother is present in HH (1) or not (0)	0.839	0.367
Mother Education	Dummy variable indicating if the highest qualification of the mother is at least primary school(1) or not (0)	0.105	0.307
<i>Household level</i>			
HH head sex	Dummy variable indicating if the HH is headed by a male (1) or female (0)	0.710	0.454
Polygamous	Dummy variable indicating if HH is polygamous (1) or not (0)	0.087	0.282
Landholding	Size of land owned by the HH in acres	23.098	571.542
Livestock	Dummy variable indicating if the HH engage in livestock farming (1) or not (0)	0.418	0.493
NFE	Dummy variable indicating if the HH operates a non-farm enterprise (1) or not (0)	0.516	0.500
HH asset index	Index of living conditions	0.246	0.990
Mining	Dummy variable indicating if the HH engages in mining (1) or not (0)	0.003	0.050
<i>Community level</i>			
Presence Primary	Dummy variable indicating if there is a primary school in the community (1) or not (0)	0.849	0.358
Presence JHS	Dummy indicating if there is a junior high school in the community (1) or not (0)	0.625	0.484
Distance Motor	Distance from the community to the closest motorable road (km)	0.010	0.379
RuralUrban	Dummy variable indicating if the community is an urban (1) or rural (0) one	0.410	0.492
<i>Other control Vs.</i>			
Coastal	Dummies variable indicating if the child is in the coastalecological zone	0.208	0.406
Forest	Dummy variable indicating if the child is in the forest ecological zone	0.448	0.497
Savannah	Dummy variable indicating if the child is in the savannah ecological zone	0.301	0.459
<i>Regions</i>			
Western	Dummy variable indicating if the child lives in Western region	0.095	0.293
Central	Dummy variable indicating if the child lives in Central region	0.087	0.282
Greater Accra	Dummy variable indicating if the child lives in Greater Accra	0.124	0.330
Volta	Dummy variable indicating if the child lives in Volta region	0.102	0.303
Eastern	Dummy variable indicating if the child lives in Eastern region	0.114	0.318
Ashanti	Dummy variable indicating if the child lives in Ashanti region	0.164	0.370
Brong Ahafo	Dummy variable indicating if the child lives in Brong Ahafo region	0.095	0.293

Northern	Dummy variable indicating if the child lives in Northern region	0.129	0.335
Upper East	Dummy variable indicating if the child lives in Upper East region	0.033	0.178
Upper West	Dummy variable indicating if the child lives in Upper West region	0.033	0.178
Month of interview			
January	Dummy variable indicating if the child was interviewed in January	0.095	0.293
February	Dummy variable indicating if the child was interviewed in February	0.107	0.309
March	Dummy variable indicating if the child was interviewed in March	0.101	0.301
April	Dummy variable indicating if the child was interviewed in April	0.098	0.297
May	Dummy variable indicating if the child was interviewed in May	0.094	0.291
June	Dummy variable indicating if the child was interviewed in June	0.020	0.139
July	Dummy variable indicating if the child was interviewed in July	0.102	0.302
August	Dummy variable indicating if the child was interviewed in August	0.109	0.312
September	Dummy variable indicating if the child was interviewed in Sept.	0.097	0.295
October	Dummy variable indicating if the child was interviewed in October	0.094	0.292
November	Dummy variable indicating if the child was interviewed in Nov.	0.035	0.185
December	Dummy variable indicating if the child was interviewed in Dec.	0.050	0.217
N	Number of Observations	20,113	

All calculations control for sampling weights.

Source: Own Calculation from GLSS7

Table 2 presents the definition and summary statistics (mean and standard deviation) of the variables used in the analysis. Of children aged 5 to 14, 13.2% were involved in some form of child labour and was significant in the *ttest*. The average number of hours that these children work per week is 13.5hrs. This is high given that, according to the law of Ghana, children this age are not supposed to work. Almost sixty-six percent (65.7%) of these children live in a household located in cocoa growing regions. This may be the consequence that 6 out of 10 regions in Ghana are known to be cocoa growing regions. However, only 10.7% of the children live in a household that are cocoa producing households. Showing significant differences in the *ttest*, on average for households that produce cocoa, the total amount derived from cocoa production is GH¢² 1594.25 and the mean share of cocoa income against total household income is 1.6% (including all households in both CGHs and NCGHs). There are slightly more boys in the sample than girls (52.4% vs 47.6%) with an average age of a child being 9.4 years. Seventy-three percent of the children are enrolled in school with 11.8% of the children having neither of their parents in their households (denoted as “Orphans”). The average age of mothers is higher than the average age of fathers (32 vs 29 years old), both significant in the *ttest*. Sixty-four percent of the children have their fathers present in the household but only 24% of their

² 1\$ = GH¢ 4.4 in this study using the average exchange rate in 2017.

fathers have had at least primary school education. Similarly, 83% have mothers present in the household but only 11% of them have at least primary school education. This shows a very low formal literacy rate among parents but is encouraging since these parents have seen a greater need to educate their children thus high enrolment for the children.

Demonstrating that the hierarchical system in Ghana is male-dominated and men play a greater role in the household in most aspects, 71% of the households the children live in, are headed by males which only 8.7% of these households being polygamous. Twenty-three acres is the average landholding size of the households in the survey and 51% of them own and operate various Non-Farm Enterprises (NFE). Only 0.3% of the households are involved in mining but 41% of them own livestock. From the community level statistics, 85% of the communities host at least one primary school and 63% have at least one Junior High Schools (JHS). This isn't surprising in Ghana because, various successful attempts have been undertaken by the government to increase the accessibility and availability of primary education. In 1995, the Free Compulsory Universal Basic Education (FCUBE) programme was introduced, which intended to improve basic education (including elementary and junior high school education) by offering among other things, free tuition and improved infrastructure (Akyeampong, 2009). Although tuition costs have been eliminated, parents are still responsible for the cost of school supplies and supplies such as clothing, transportation, and meals, as well as any new indirect fees the school imposes in their stead (Krauss, 2013). Finally, in the sample, more children live in rural areas (59%) than in urban areas, and among the three ecological zones, more children live in the forested zones than the savannah and coastal.

4.1.2 Current activity status of Children aged 5 – 14 years

Child labour statistics are presented in Table 3. These categorise children in terms of their economic activeness. The table presents the percentage of children who are found in the labour force (the children who are working, looking for work or have worked in the immediate past) and the number of children who are actually working (child labour) in the reference period. It also shows those not working and the number of children who are not in the labour force. This is done for the three (3) sub groups, whole dataset, children in rural communities and children in rural communities in CGRs only.

Table 3: Percentage distribution on current activity status of children ages 5-14 by locality and sex in percentages

Activity status	Total (20113)			Rural (14,565)			Rural in CGRs (6,700)		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
Pop 5-14 (29.2%)	47.13	52.87	100	47.46	52.54	72.42	47.88	52.12	46
Labour force (%)	46.78	53.22	14.67	48.54	51.46	20.19	49.64	50.36	16.35
Employed (Child labour)	47.13	52.87	13.22	48.57	51.43	18.46	49.07	50.93	15.64
unemployed	44.26	55.74	1.45	48.16	51.84	1.73	62.42	37.58	0.71
Not in labour force	47.74	52.26	85.33	47.96	52.04	79.81	48.26	51.74	83.65

Statistics are weighted using sample weights

Source: own calculations from GLSS7

Statistical distribution on the current activity status of people aged 5 -14 shows children 5 – 14 years make up 20,113 in the dataset. Boys (52.87%) outnumber girls (47.13%) by a substantial margin. In rural parts of the country, 72.42 percent of the sample is aged of 5 – 14. While 13.22% were involved in some type of economic activity (Child labour), only 1.45% of were not in child labour. This resulted in a 14.67 percent of children in the labour force in Ghana. In the rural setting, 18.46% percent of children were involved in some type of economic activity out of a labour force percentage of 20.19%. In rural areas in CGRs only, 15.64% of the children worked, out of a 16.35% labour force. Boys are more than girls in the workforce in all categories.

4.1.3 Comparative Analysis of Child Labour prevalence by Locality

Tables 4 show the comparative analysis of child labourers aged 5 – 14 years per locality. The analysis shows differences between children in CGRs & NCGRs and also, children living in CGHs and the children who live in NCGHs. The distribution is also sub-divided into three groups (full data, rural children only and rural children in CGRs) similar to that of Table 3. The study first runs comparisons on the full data, then on children living in rural communities, and finally, on children living in rural communities in Cocoa growing regions.

Table 4: Comparative distribution of child labour prevalence for children in Ghana aged 5 – 14 years in percentages.

Activity Status	CGRs			NCGRs			CGHs			NCGHs		
	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys
<i>Full data</i>												
Employed (Child labour)	11.88	48.35	51.65	15.78	45.37	54.63	14.39	47.13	52.87	13.07	47.13	52.87
<i>Rural Only</i>												
Employed (Child labour)	15.64	49.07	50.93	24.30	47.92	52.08	15.38	49.11	50.89	19.02	48.50	51.50
<i>Rural in CGRs</i>												
Employed (Child labour)	-	-	-	-	-	-	15.38	49.11	50.89	15.72	49.05	50.95

Statistics are weighted using sample weights

Source: own calculations from GLSS7

The percentage distributive analysis based on the full data shown in table 4 shows that 11.88% of children in CGRs are child labourers. The boys in this setting are more involved than girls (51.45 vs 48.55%). However, in NCGRs, 15.78% of them are involved in child labour. Here, the boys outnumber the girls in child labour by almost 5%. The percentages in these two settings, CGRs and NCGRs, show that more children are involved in child labour in NCGRs. However, in both settings, boys outnumber girls. With the second comparison, however, it is revealed that there is a slightly higher percentage of child labour with children living in CGHs as opposed to children living in NCGHs. Child labour among children living in CGHs accounts for 14.39%. In the opposite sense, child labour in NCGRs 13.07% are involved in child labour. Similarly, boys are more involved in child labour for both categories than girls.

Previous research including Afriyie et al., 2019; Das, 2022; Giang et al., 2021, all point out the disparities in child labour prevalence for children in rural and urban settings. They all indicate a high prevalence of child labourers in rural areas and reveal a higher likelihood of rural children's involvement in child labour due to several factors including resource constraints. Similarly, multidimensional poverty is twice as prevalent in rural regions as it is in urban ones in Ghana, according to the United Nations Development Program (UNDP, 2020). Cocoa production in Ghana is done in rural areas and thus the second part of table 4 focuses on children in rural settings to reveal the percentage distribution of child labour among rural children in Ghana. Children living in rural communities in CGRs show 15.64% of them being involved in child labour. However, higher

percentages are observed for those children in NCGRs. Twenty-four percent of the children in NCGRs are child labourers. This vast difference shows more children in rural NCGRs are involved in child labour. Apart from the Greater Accra region, the capital city, the remaining NCGRs are considered the country's poorest and record the highest multidimensional poverty and inequalities in Ghana (UNDP, 2020). While child labourers living in CGHs represent 15.38%, child labourers in NCGHs are 19.02%.

Finally, the last part of table 4, interestingly reveals a similar percentage of child labourers in both children living in CGHs and their counterparts. Child labourers among children living in CGHs stand at 15.38%. Conversely, the child labour percentage of children in NCGHs stands at 15.72%. This shows that these children, irrespective of the household they live in, still engage in child labour and the percentages reveal a similar prevalence of child labour in CGHs and NCGHs.

The purpose of the comparative analysis was to gain insight into the prevalence of child labour by locality using simple percentages. In testing hypothesis 1 (H_1), the study uses this analysis to reveal the percentages of child prevalence in CGRs & NCGRs and CGHs & NCGHs. Amidst the revelation that a higher prevalence of child labour is recorded in rural poor areas, this comparison further shows that, in Ghana, the issue of child labour is not peculiar to cocoa areas and cocoa households. There exist several issues of child labour in areas where cocoa is not grown. Additionally, the NORC report prepared by Sadhu et al., (2021), on the progress of child labour in Ghana, reveals that there has been an increase in children (both in cocoa and non-cocoa areas) involved in child labour and that children in non-cocoa areas involved in child labour mostly are involved in other sectors or other agricultural production.

Similarly, apart from the analysis using the whole dataset where the prevalence of child labour in CGHs outnumbered NCGHs, the prevalence of child labour was generally more prevalent in children living in NCGHs. The report by Sadhu et al., (2021) also reveals that, apart from working in cocoa production, children who are involved in child labour engage in several other activities like other crop production, often given little attention. The comparative analysis further reveals the gender disparity with respect to the prevalence of child labour in all sub-samples. It shows that boys engaged more in economic activities than girls both in Cocoa areas and Non-cocoa areas. This gender disparity findings agrees with studies by Afriyie et al., (2019) and Basu et al., (2010), who also observe more boys in child labour than girls. These gender differences have been observed in other countries. For instance, Giang et al., (2021), who studied determinants of child labour in Vietnam, found that male child labourers exceeded their female counterparts in terms of prevalence. Sadhu et al., (2021) further point out the issue of higher proportion of boys against girls. They note that in cocoa growing areas

in both Ghana and the Ivory Coast, the two largest producers of cocoa, a higher percentage of boys were engaged in child labour in agriculture than girls. Dammert et al., (2018) also found that males are more likely than girls to participate in child labour, especially at later ages. When it comes to children aged 15 to 17 years, the ILO, (2017) predicts a 5 percentage-point gender disparity. For this reason, it is possible that some of the productive actions performed by girls go unnoticed or unreported, as noted by the ILO, (2017). Household duties, which are usually less regarded in child labour estimates, require girls to work larger hours than boys.

4.1.4 Main industry of working children ages 5 – 14 years.

Besides discussing the prevalence of child labour in various settings, the study further investigates the main industries in which child labourers are involved. Table 6 gives a breakdown of the industries that the children are working in Ghana, disaggregated per gender and locality. These were chosen GLSS7, based on previous experience with household surveys and based on the industries that have a higher record of child labour in Ghana. These industries include, among others, agriculture, forestry & fishing; mining & quarrying; manufacturing; construction; wholesale & retail; transportation & storage; and accommodation & food services.

Table 6: Industrial classification of working children aged 5-14 years by industry, locality and sex in percentages

Main industry	Total (N=20,113)			Rural (N=14,565)			Rural CGRs (N=6700)		
	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys
Agriculture, forestry and fishing	82.19	48.31	51.69	89.54	49.01	50.99	86.81	49.72	50.28
Mining and quarrying	0.09	18.03	81.97	0.11	18.03	81.97	0.11	33.33	66.67
Manufacturing	4.15	38.06	61.94	2.58	47.72	52.28	3.11	49.85	50.15
Construction	0.15	30.73	69.27	0.09	30.99	69.01	0.09	0.00	100
Wholesale and retail trade	10.90	58.36	41.64	6.61	56.45	43.55	8.71	55.94	44.06
Transportation and storage	0.13	22.66	77.34	0.04	0.00	100.00	0.00	0.00	0.00
Accommodation and food services	1.82	54.02	45.98	0.00	50.61	49.39	1.12	55.23	44.77
Administrative and support service acts	0.03	100.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00
Other service activities	0.40	43.03	56.97	0.09	47.16	52.84	0.00	0.00	0.00
Activities of households as employers	0.13	100.00	0	0.07	100.00	0.00	0.05	100.00	0.00
Total	100.00			100.00			100.00		

Statistics are weighted using sample weights

Source: own calculations from GLSS7

As illustrated in table 6, an overwhelming majority (82.19%) of the working children were engaged in the agriculture, forestry & fishing industry with boys outnumbering girls by almost 2% points. The wholesale & retail industry recorded the second highest working children percentage (10.90%). Interestingly, this industry has more girls involved than boys. For rural children, 89.54% of the working children work in agriculture, forestry & fishing with boys being the majority with a slight margin of about 1 percentage point. The wholesale and retail industry holds 6.61% of these children. Girls dominate the activities of the household even though that record a smaller percentage. The manufacturing sector also records 2.58% of the working children with boys dominating the sector. Working children in rural communities in CGRs are concentrated in the agriculture, forestry &

fishing industry as well with a large percentage 86.81%. The wholesale & retail industry comes second with 8.71%, and manufacturing third with 3.11%. According to GSS (2014) and a literature review by (Adonteng-Kissi, 2018), the proportion of boys working in agriculture, forestry, and fishing was higher than the number of girls. To put this in perspective, Kapoor, (2017) reveals that in Ghana, an estimated 391,236 girls work in cocoa-growing regions (or 36.8% of the entire female population in these regions), compared to 527,307 boys (or 63.2 percent of the total male population). This seems to be a trend even in other countries. For example, in a study on child labour in India by Das, (2022), the agricultural sector recorded the highest percentage of child labourers, followed by manufacturing, wholesale & retail trade and construction. Children in rural regions are more likely to work in agriculture due to limited options, while children in urban areas are more likely to engage in “trade, child domestic work (CDW), fishing, and construction”. A small number of children are employed in the textile and footwear industries compared to the large number of youngsters working as CDWs (ILO et al., 2016).

4.1.5 Hours of work of working children 5-14 years

Table 7 presents the hours of work per week of the children aged 5-14 years. The study looks at the average hours worked based on sex and locality. The distribution of the number of hours worked is also presented to reveal the number of hours most children work for.

Table 7: Distribution of working children aged 5-14 years by sex, hours worked per week and average hours

Age/sex & locality	0-9	10-19	20-29	30-39	40+	Total	<=40	>40	Ave. Hrs Worked
Total (%)	50.90	23.72	12.52	7.21	5.65	100	95.46	4.54	13.49
<i>Sex</i>									
Girls (%)	51.96	25.00	11.18	6.79	5.07	100	95.87	4.13	13.13
Boys (%)	49.92	22.58	13.69	7.59	6.22	100	95.04	4.96	13.81
<i>Locality</i>									
Urban (%)	54.72	23.79	8.76	5.66	7.07	100	96.07	3.93	12.21
Rural (%)	50.04	23.69	13.3	7.54	5.43	100	95.28	4.72	13.77
<i>CGRs</i>									
CGHs (%)	55.31	22.77	15.12	4.22	2.58	100	97.71	2.29	11.78
NCGHs (%)	50.29	23.85	12.14	7.61	6.11	100	95.11	4.89	13.72
<i>Regions</i>									
Western (%)	55.68	21.99	11.5	6.49	4.34	100	95.66	4.34	12.13
Central (%)	63.68	24.02	6.7	1.38	4.22	100	97.29	2.71	9.84
Greater Accra (%)	56.89	22.58	10.6	6.04	3.89	100	100	0.00	11.82
Volta (%)	35.95	23.92	17.08	16.05	7.00	100	94.89	5.11	18.09
Eastern (%)	56.22	27.33	7.72	5.64	3.09	100	98.56	1.44	11.25
Ashanti (%)	32.93	37.07	24.7	1.89	3.41	100	98.66	1.34	15.21
Brong Ahafo (%)	55.81	20.04	10.66	7.09	6.40	100	93.89	6.11	13.45
Northern (%)	53.37	19.01	12.52	7.28	7.82	100	92.64	7.36	13.6
Upper East (%)	51.07	23.65	12.36	7.25	5.67	100	95.48	4.52	14.53
Upper West (%)	47.36	20.51	14.85	12.22	5.06	100	96.63	3.37	14.93

Statistics are weighted using sample weights

Source: own calculations from GLSS7

On average, children work 13.49 hours per week. The majority (95.46) of them work maximum 40 hours while only 4.54% of them work more than 40 hours per week. Fifty-one percent of them work for up to 9 hours per week. In terms of sex, working boys have a slightly higher average working hours per week (13.81 hours) than girls (13.13 hours). About 96% of the girls work up to 40 hours similarly to 95.04% of the boys. Children in rural areas work for more hours than urban children (13.77 vs 12.21 hours). This inference is similar to the findings in Vietnam by (Giang et al., 2021) who identify that, male child labourers work more hours than female child labourers and children living in rural communities work for more hours. In CGRs, children living in NCGHs work more

hours on average (13.72 hours) than children living in CGHs. For regional averages, children in the Volta region, a cocoa region and the 4th poorest region in Ghana according to UNDP, (2020), had the highest weekly average working hours (18.09 hours) and the Central region, a cocoa region too, recorded the lowest average (9.84 hours). The second highest average was recorded in the Ashanti region followed by the two upper regions (east and west). Relatively, higher proportions of children in the Northern Region (7.82%), a non-cocoa region, worked for more than 40 hours per week. Interestingly, the two highest average working hours per week (18.09 & 15.21) were recorded in cocoa producing regions (Volta & Ashanti regions) and the two lowest average working hours per week (9.84 & 11.25) were also recorded in cocoa producing regions (Central & Eastern regions) as well.

4.1.6 Child labour status and poverty

Several studies, including Janssens et al., (2019), have used the household asset indexes as a proxy for permanent income. This is constructed by Principal Component Analysis (PCA) and used to represent the living standard of households. Statistics on this show the various household wealth index distribution based on their living conditions; poorer families are closer to 1 while the relatively wealthier ones are closer to 5, on a 5-point scale. To make this more revealing, Table 7 was constructed with child labour status. In this, we observe various families living conditions and the families who have more of their children involved in child labour.

Table 7: Child labour distribution by status of poverty using household wealth index

Child Labour	Wealth index quintile (5-point scale)					Children Aged (5-14)
	Poorest	Poorer	Middle	Richer	Richest	
	1	2	3	4	5	
Total (%)	13.97	15.78	19.93	25.06	25.26	100
Working child (%)	22.54	19.56	15.58	10.2	5.23	13.22
Non-working child (%)	77.46	80.44	84.42	89.8	94.77	86.78

Statistics are weighted using sample weights

Source: own calculations from GLSS7

Presented in Table 7 is a cross-tabulation of the wealth index quintile and the child labour status of the children aged 5-14. The wealth index quintile gives a distribution of the household involved and in which economic conditions the children are found. This allows us to show how poverty status of a household. It can be observed that 13.97% of households in this study have the lowest score and are thus seen as the “poorest”. Sixteen percent of them scored 2, showing they are relatively better off than the worst, while the average score of 3 recorded 19.93%. More than 50% of the household scored 4 and 5 making them relatively economically sound. This shows that more children are found in households that are regarded as economically superior and have relatively good wealth status.

When the economic status is compared with the child labour status, it is observed that children from poorer households are more involved in child labour. The highest percentage, 22.54% of the children involved in child labour in this study come from families recorded as the poorest. And as the income status of the family increases, there is an observed reduction in the percentage of children involved in child labour. Only 5.23% of the children involved in child labour come from households that are deemed economically strong. Similarly to the non-working children, richer households have more non-working children than working children. This further buttresses the earlier studies that show that poverty is a main driving force of child labour and child labourers are mainly found in households that are economically handicapped (ILO & UNICEF, 2020, 2021; Sinha, 2019).

4.2 Regression Results

The regression results in this section are divided into two parts. The first part presents the Logit regression results that reveal the determinants of child labour using the “cocoa variables” defined above. The marginal effects of these variables are shown with and without control variables, and the significant variables with control variables are interpreted accordingly (Table 8). The second part of the regression results presents the influence of control variables alone on the child labour status and hours (Table 9).

4.2.1 Influence of cocoa variables on child labour status

Table 8 shows the Logit regression results of the influence of the cocoa variables on child labour status. These regressions were done at several levels. First, regressions were run using the entire sample of children in Ghana (N=20,113), second with a sub-sample of children in rural households, and third, with a sub-sample of children in rural households in cocoa-growing regions (CGRs). The regressions were done for both genders and then separately for respective genders (girls and boys).

Table 8: Determinants of child labour in Ghana. Results from the Logit regression

<i>Covariates</i>	Both (N=20,113)		Girls (N=9,480)		Boys (N=10,633)	
<i>Full Sample (N=20,113)</i>						
Located in CGRs	-0.037*** (0.005)	0.118** (0.049)	-0.031*** (0.007)	0.101 (0.093)	-0.043*** (0.007)	0.170*** (0.059)
Living in CGHs	0.012 (0.008)	0.015 (0.009)	-0.001 (0.012)	-0.005 (0.013)	0.026** (0.012)	0.034** (0.013)
Total income from Cocoa	-1.424 (1.694)	-1.646 (1.594)	-2.111 (2.446)	-23.979 (23.857)	-0.577 (2.296)	-6.166 (22.996)
Log of Total income from Cocoa	0.001 (0.002)	0.001 (0.001)	-0.001 (0.002)	-0.002 (0.003)	0.002 (.002)	0.003 (0.002)
Share of household income from Cocoa	-0.035** (0.018)	-0.034** (0.016)	-0.039 (0.031)	-0.041 (0.027)	-0.032 (0.020)	-0.028* (.017)
<i>Rural Children only (N=14,565)</i>						
Located in CGRs	-0.081*** (0.006)	0.184** (0.076)	-0.083*** (0.010)	0.159 (0.134)	-0.080*** (0.009)	0.216*** (0.081)
Living in CGHs	-0.039*** (0.012)	0.021 (0.014)	-0.055*** (0.017)	0.006 (0.019)	-0.022 (0.017)	0.038** (0.019)
Total income from Cocoa	-6.43** (2.78)	-2.146 (2.215)	-7.530* (4.002)	-2.828 (3.073)	-5.202 (3.851)	-1.053 (3.117)
Log of Total income from Cocoa	-0.004* (0.002)	0.002 (0.003)	-0.007** (0.004)	-0.001 (0.004)	-0.002 (0.003)	0.005 (0.003)
Share of income from Cocoa	-0.098*** (0.036)	-0.041* (0.021)	-0.112** (0.056)	-0.052 (0.035)	-0.084* (0.045)	-0.035 (0.022)
<i>Rural Children in CGRs (N=6,700)</i>						
Located in CGRs	-	-	-	-	-	-
Living in CGHs	-0.003 (0.012)	0.029** (0.012)	-0.019 (0.017)	0.022 (0.017)	0.012 (0.016)	0.039** (0.016)
Total income from Cocoa	-2.761 (2.063)	-1.864 (1.885)	-3.723 (3.033)	-2.055 (2.787)	-1.702 (2.765)	-0.870 (2.588)
Log of Total income from Cocoa	-0.001 (0.002)	0.002 (0.002)	-0.003 (0.003)	-0.008 (0.029)	0.002 (0.003)	0.004 (0.003)

Share of income from Cocoa	-0.056** (0.025)	-0.037** (0.018)	-0.065 (0.042)	-0.045 (0.029)	-0.046 (0.029)	-0.033* (0.019)
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Addition of Control variables	No	Yes	No	Yes	No	Yes
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*Coefficients are derived from separate full regression models (e.g. the full regression model for living in CGHs is presented in Table 9) and summarized in this table. The estimates are weighted using the sampling weights. Robust standard errors in brackets. Significant effects: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$*

With the regression using the entire sample, Table 8 shows that two variables are statistically significant at 5% and associated with child labour. After controlling for the child, parent, households, and community characteristics, the dummy variable indicating if the child is located in a CGR or not is significant and has a positive effect on child labour. This means children who live in CGRs are 11.8% more likely to be involved in child labour in Ghana than the children in NCGRs *ceteris paribus*. Also, the share of income derived from cocoa has a negative impact on child labour, showing that when the share of income derived from cocoa in the household increases, there is less likelihood for children in that household to be involved in child labour (3.4%). No variable was found to significantly impact the child labour status of girls, but three (3) variables are statistically significant and impact the child labour status of boys. The coefficient of the variable “Boys located in CGRs is significant at 1% and positively impacts their child labour status. This means that a boy located in a CGRs in Ghana has a 17% higher likelihood of being involved in child labour than boys in NCGRs. In the same way, boys who live in CGHs also have a 3.4% higher probability of being involved in child labour than their counterparts. The share of household income from cocoa production also negatively and significantly influences boys’ involvement in child labour. This means that boys are less likely to be involved in child labour when their household derives a higher share of their income from cocoa production, *ceteris paribus*.

Furthermore, the results of the regressions using only rural children show a similar trajectory as the full sample. Two (2) variables are statistically significant at 5% and 10%, respectively. In this section of the results, Children living in CGRs are 18.4% more likely to be involved in child labour than children living in NCGRs, when the control variables are added. Also, higher household income derived from cocoa production has a negative impact on rural children’s involvement in child labour (4.1% probability decrease per 1% increase in cocoa share in income). Finally, rural boys located in CGRs and CGHs have a higher likelihood of being child labourers than their counterparts located in

NCGRs and NCGHs. Their probability of being involved in child labour is 21.6% and 3.8%, respectively than their counterparts.

The last regression involving only children in rural households in CGRs reveals similar results as the previous two. Two (2) variables are statistically significant at 5% and impact the probability of involvement in child labour. Rural children in CGRs who live in households producing cocoa (CGH) have a higher probability (2.9%) of engaging in child labour than their counterparts (i.e. those not living in CGHs in these regions). Also, these children have a lesser probability (3.7%) of being involved in child labour if the share of their household income derived from cocoa production rises by 1%, *ceteris paribus*. Moreover, rural boys in CGRs have a higher probability (3.9%) of being involved in child labour if they live in households that produce cocoa. Boys also have a lesser likelihood (3.3%) of being involved in child labour if the share of their household income derived from cocoa production rises by 1%, *ceteris paribus*.

The findings of this study, showing that children in cocoa areas and households, after controlling for several factors, are more susceptible to child labour support the numerous studies on the issue of child labour in agriculture, especially in cocoa production (Ansong, 2020; Asamoah et al., 2018; Baah, 2010; Luckstead et al., 2019; Sana & Jan, 2021). The comprehensive NORC report by Sadhu et al., (2021) shows that approx. 80% of children in cocoa-growing areas in Ghana and Cote d'Ivoire are economically active. Over ten years, there has been a 14% increase in the proportion of children working in cocoa-growing areas. Other studies (Owusu & Kwarteye, 2008; WACAP, 2003) find a similar trend where children in cocoa growing areas in Ghana have a greater probability of being involved in child labour than children living in regions where cocoa is not grown. Also, our second finding regarding the impact of the income share derived from cocoa is in line with other studies (Nkamleu, 2009; Owusu & Kwarteye, 2008). Indeed, studies find that cocoa farmers will typically seek the cheapest labour and thus will sort to using child labour if available. However, this revelation may mean that farmers who have the largest share of household income from cocoa find their cocoa production very important and thus, are ready to spend more money to hire more skilled labour and machinery. In Ghana, the Ghana Cocoa Board (COCOBOD) Scholarships Scheme served as a source of educational support for children of cocoa farmers in the country (COCOBOD, 2022), and farmers who have a majority of their income from cocoa production (solely dependent on cocoa) will usually be the recipient of these schemes. This will reduce the probability of their children engaging in child labour.

4.2.2 Other determinants of child labour

Table 9 shows the results from both the Logit and OLS regressions, where all the control variables used in this study are tested. This is done for the full data and children in rural households only. Our goal is to determine the influence of the child, parents, household, and community characteristics, including ecological zone and regional dummies, on the child labour status and hours.

Table 9: Control variables' influence on child labour. Logit and OLS Regression results

Covariates	Full data (N=20,113)				Rural only(N=14,565)			
	Both		Girls	Boys	Both		Girls	Boys
	<i>Logit</i>	<i>OLS</i>	<i>Logit</i>	<i>Logit</i>	<i>Logit</i>	<i>OLS</i>	<i>Logit</i>	<i>Logit</i>
Living in CGHs	0.015 (0.010)	0.120 (0.182)	-0.006 (0.013)	0.034** (0.014)	0.021 (0.014)	0.528** (0.209)	0.006 (.019)	0.039** (.019)
Age	0.083*** (0.008)	0.620*** (0.149)	0.069*** (0.011)	0.096*** (0.012)	0.105*** (0.011)	0.972*** (0.206)	0.097*** (0.016)	0.111*** (.016)
Age squared	-0.003*** (0.000)	-0.008 (.008)	-0.002*** (.000)	-0.003*** (.001)	-0.003*** (0.001)	-0.016 (.011)	-0.003*** (0.001)	-0.004*** (0.001)
Sex of child	-0.003 (0.005)	-0.143 (0.101)	-	-	0.003 (0.007)	-0.218 (0.146)	-	-
Number < 5y	-0.000 (0.001)	0.027 (0.025)	-0.000 (0.001)	-0.001 (0.001)	0.000 (0.001)	0.042 (0.031)	0.001 (0.001)	-0.001 (0.001)
Number >= 5 y	0.001 (0.000)	0.004 (0.010)	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	0.001 (0.012)	0.001 (0.001)	0.001 (0.001)
Childschool	-0.022*** (0.008)	-1.284*** (.201)	-0.028*** (0.009)	-0.019* (0.010)	-0.042*** (0.010)	-1.777*** (0.272)	-0.041*** (0.013)	-0.042*** (0.014)
Orphan	0.042** (0.017)	1.027*** (0.286)	-0.007 (0.024)	0.087*** (0.024)	0.042 (0.026)	1.005** (0.425)	-0.016 (0.038)	0.097*** (0.035)
AgeFather	-0.000 (0.000)	0.017 (0.011)	-0.001*** (0.000)	0.001 (0.001)	-0.000 (0.001)	0.021 (0.014)	-0.002** (0.001)	0.001 (0.001)
Fathers HH Presence	0.037* (0.020)	-0.815 (0.542)	0.067** (0.029)	0.007 (0.027)	0.038 (0.029)	-0.932 (0.680)	0.081* (0.043)	-0.006 (0.039)
Father Educ	0.002 (0.010)	-0.209 (0.194)	0.008 (0.015)	-0.004 (0.014)	0.006 (0.014)	0.149 (0.239)	0.009 (0.020)	-0.002 (0.018)
AgeMother	0.000 (0.000)	-0.003 (0.006)	0.001 (0.001)	0.000 (0.000)	0.000 (0.000)	-0.007 (0.010)	0.000 (0.001)	0.000 (0.001)
Mother HH Presence	0.002 (0.019)	0.792** (0.348)	-0.033 (0.027)	0.039 (0.027)	-0.003 (0.028)	0.752 (0.522)	-0.032 (0.041)	0.033 (0.039)
Mother Education	-0.001 (0.012)	0.075 (0.204)	-0.014 (0.016)	0.008 (0.017)	-0.032* (0.018)	-0.751*** (0.277)	-0.039 (0.025)	-0.030 (0.025)

HH head sex	-0.014 (0.011)	0.228 (0.186)	-0.008 (0.015)	-0.020 (0.014)	0.004 (0.016)	0.663*** (0.253)	-0.001 (0.025)	0.003 (0.020)
Polygamous	-0.016** (0.008)	0.462* (0.259)	-0.014 (0.011)	-0.018 (0.011)	-0.014 (0.011)	0.294 (0.313)	-0.024 (0.015)	-0.003 (0.015)
Landholding	-0.000 (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Livestock	0.076*** (0.008)	0.716*** (0.171)	0.082*** (0.011)	0.072*** (0.011)	0.099*** (0.012)	0.717*** (0.212)	0.091*** (0.016)	0.113*** (0.017)
NFE	0.017*** (0.005)	0.284*** (0.103)	0.030*** (0.008)	0.005 (0.007)	0.017** (0.008)	0.317** (0.157)	0.033*** (0.012)	0.002 (0.011)
HH asset index	-0.018*** (0.004)	-0.081 (0.064)	-0.023*** (0.005)	-0.013*** (0.005)	-0.014*** (0.005)	-0.078 (0.088)	-0.026*** (0.008)	-0.006 (0.007)
Mining	0.093 (0.033)	1.124 (0.908)	0.087** (0.039)	0.092 (0.061)	0.002 (0.050)	0.685 (1.186)	0.015 (0.059)	-0.054 (0.105)
Presence Primary	-0.110*** (0.049)	-1.350 (1.044)	-0.113 (0.093)	-0.144** (0.058)	-0.152** (0.076)	-1.339 (1.401)	-0.139 (0.133)	-0.175** (0.079)
Presence JHS	-.002** (.039)	-.407 (.662)	.081 (.059)	-.078 (.050)	-0.025 (0.058)	-1.078 (0.808)	0.099 (0.081)	-0.152** (0.062)
Distance Motor road	-.020 (.013)	-.064 (.041)	-.045** (.022)	-0.002 (0.006)	-0.019 (0.017)	-0.155 (0.102)	-0.046* (0.023)	0.001 (0.024)
RuralUrban	-0.069*** (0.008)	-0.960*** (0.123)	-0.083*** (0.013)	-0.059*** (0.010)	- (0.010)	- (0.010)	- (0.010)	- (0.010)
Western	-0.104*** (0.018)	-0.886 (0.386)	-0.137*** (0.025)	-0.074* (0.027)	-0.146*** (0.025)	-0.974** (0.449)	-0.166*** (0.034)	-0.124*** (0.036)
Central	0.123** (0.053)	1.126 (0.842)	0.042 (0.093)	0.237*** (0.069)	0.188** (0.090)	1.618 (1.159)	0.058 (0.142)	0.338*** (0.097)
Volta	0.148*** (.052)	3.525 (0.831)	0.040 (0.092)	0.282*** (0.067)	0.216** (0.089)	4.776*** (1.141)	0.060 (0.140)	0.381*** (.093)
Greater Accra	0.079 (0.055)	0.899 (0.852)	-0.015 (0.094)	0.199*** (0.072)	0.309*** (0.092)	2.164* (1.236)	0.165 (0.144)	0.460*** (0.102)
Eastern	0.095* (0.053)	1.384 (0.839)	-0.009 (0.093)	0.230*** (0.069)	0.162* (0.091)	2.195* (1.150)	-0.003 (0.142)	0.343*** (0.096)
Ashanti	0.010 (0.054)	1.370* (0.823)	-0.090 (0.094)	0.144* (0.069)	0.087 (0.091)	2.649** (1.138)	-0.098 (0.144)	0.280*** (0.097)
Brong Ahafo	0.117** (0.050)	1.687 (1.063)	0.103 (0.094)	0.163*** (0.059)	0.181** (0.077)	1.939 (1.420)	0.159 (0.134)	0.208** (0.082)
Northern	0.138*** (0.049)	2.212** (1.054)	0.111 (0.093)	0.196*** (0.059)	0.172** (0.076)	2.699* (1.404)	0.147 (0.133)	0.203** (0.081)
Upper East	0.119**	2.549***	0.026 (0.092)	0.244***	0.202**	3.715***	0.052	0.365***

	(0.052)	(0.790)		(.066)	(0.088)	(1.084)	(0.139)	(0.092)
Upper West	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline
N	20,113	20,113	9,480	10,633	14,565	14,565	6,913	7,652
Wald Chi ² /F	2076.40	28.52	1064.99	1138.82	1271.79	22.54	679.35	705.18
Prob>chi ² /F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R ²	0.191	0.095	0.206	0.192	0.147	0.111	0.157	0.152

The estimates are weighted using the sampling weights. Robust standard errors in brackets. Significant effects:

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

4.2.2.1 Child characteristics

Some child characteristics proved to be significant determinants of child labour status and their working hours in Ghana. Variables, including the child's age and its square, being in school, and being an orphan, were significant at different levels. Firstly, the age of a child and its square have positive and negative impacts on child labour, respectively. This shows that older children, including boys and girls, have a higher probability of participating in child labour than younger ones, but their participation tends to decrease at higher ages. The children do 0.6hrs more with an increase of 1 year in age and 1hr more for rural children. This result is congruent with the results of earlier research (Giang et al., 2021; Magdalena et al., 2021; Nengroo & Bhat, 2017; Tang et al., 2018). The studies suggest that households send older children into the labour market while younger children go to school in countries including Vietnam, India, etc. Older children are possibly considered more capable and prepared to take on job responsibilities than younger children.

Conversely, the fact of attending school (a dummy of 1 if the child attends school and 0 otherwise) is negatively associated with child labour and child labour hours. This means that children who are enrolled in school in Ghana and rural areas in Ghana are less likely to be involved in child labour. Children do 1.2hrs less of child labour, and children in rural Ghana do 1.8hrs less child labour when they attend school. With Free Compulsory Universal Basic Education (FCUBE) in Ghana, parents are usually compelled to send their children to school rather than engage them in labour. The findings are similar to what was observed by Das, (2022) in India and Afriyie et al., (2019) in Ghana, where children who were enrolled in various levels of education (pre-primary, primary, and JHS) were less likely to be engaged in any form of child labour. Also, Giang et al., (2021) explain that typically, the fact that children who started working at a young age could not finish their education is at the root of the observed trade-off between labour market participation and school attendance in Vietnam. There was a negative correlation between how well-educated people were and how actively they sought employment.

Finally, the variable orphan (a dummy of 1 if a child has neither parents present in the household and 0 otherwise) was found to be statistically significant and positively impact child labour status. However, no significant influence of this variable was observed for girls. This means that children, especially boys, who had neither of their parents in the household, are more prone to engaging in child labour than their counterparts (i.e. children who have one or both parents). Children in households without their biological parents present are usually at a higher risk of being involved in more work. Previous studies (Huisman & Smits, 2009; Lloyd & Desai, 1992) showed that because foster children do not live with their parents, they are more likely to be involved in child labour.

4.2.2.2 Parent characteristics

Among the parents' characteristics (mothers and fathers), the likelihood of a Ghanaian child being involved in child labour increases by 3.7% if their fathers are present in the household. In Ghana, most household decisions are taken by fathers or husbands (Fuseini et al., 2019), and the presence of the father could have a significant influence on whether will engage in child labour. Also, the fathers' ages of girls in Ghana and rural girls had a significant negative impact on their involvement in child labour. This means that girls with older fathers are less likely to be engaged in child labour.

Even though fathers' education does not seem to significantly influence child labour, mothers' education impacts the child labour status and child labour hours for rural children. At a 10% significance level, children in rural households in Ghana have a 3.2% less likelihood of being involved in child labour when they have educated mothers (at least primary education). Additionally, in Ghana, a study conducted by Afriyie et al., (2019) found that children born to mothers with higher levels of education had a 7.0% lower likelihood of being labourers as children. Parents who do not have any formal education are more likely to have their children enter the workforce early, according to previous research (Edmonds, 2003; Martin, 2013; Thijs, 1997; Togunde & Carter, 2006). Parents who themselves have achieved a particular degree of education want their children to do so as well (Breen & Goldthorpe, 1997).

4.2.2.3 Household characteristics

Children in polygamous families are shown to be less likely to be involved in child labour in Ghana. In this study, we found that children in polygamous households had a 1.6% less likelihood of being involved in child labour than children in monogamous families, at a 5% significance level. This is surprising as polygamous families usually have more children (Diarra et al., 2018), and it is usually

very difficult to equally support all children. However, (Khanam, 2005) argues that in a 66% larger household with many potential child workers, the probability of any single child will be working is somewhat lower in Bangladesh. But, several other studies (Abebe & Fikre, 2021; Magdalena et al., 2021; Mudzongo & Whitsel, 2013; Nengroo & Bhat, 2017) in Ethiopia, Malawi and India respectively, oppose these findings. These studies find that households with more members have more needs that must be met and vice versa. With more people living in a home, the income per person drops. On the other side, it raises the dependency rate. Both raise the odds that a family will have to rely on a child to bring in money (either via cash or in-kind child labour) to make ends meet. Interestingly, children who live in households that rear livestock and have non-farm enterprises (NFE) are more likely to be involved in child labour. These children are 7.6% and 1.7% more likely to be engaged in child labour if their household has livestock and operates an NFE, respectively. Even for rural children and for both genders, similar probabilities were observed. Although these two are mostly seen as a form of income diversification mechanisms in predominantly farming households, (Edmonds, 2015), in a study about economic growth and child labour in low-income countries, points out that a child's net economic contribution may be significantly influenced by his or her family's land, cattle, and other productive assets. A family company, on the other hand, can only have children working in it if there is one. Children are more likely to work if their family runs a company, even though paid child labour is uncommon in most countries, according to Edmonds & Turk, (2002).

We further check the results from the cross-tabulation between child labour status and household asset/wealth index (a proxy for household income level or poverty). We find that the household asset/wealth index has a negative impact on child labour and hours. This means that children found in households with a better index score, relatively richer, are less likely to be engaged in child labour. The poorer families are more likely to have their children involved in child labour, similar to the cross-tabulation between child labour and household wealth index results in Table 5. This was also observed for children living in rural areas and for both sexes. Even though the Free Compulsory Universal Basic Education (FCUBE) programme exists, households with a low income mostly cannot afford the other costs associated with schooling, i.e., yearly development levies, uniform and books fees, etc. This result was also observed by Ofuoku et al., (2014) and (Edouard, 2019) in Nigeria and Cote d'Ivoire, respectively. Likewise, Giang et al., (2021) used a household's per-capita expenditure to represent household wealth in Vietnam and found that being part of a wealthier family reduces the probability of working for a child by 55%. Adonteng-Kissi, (2018) discovered in a focus group discussion in Ghana that participant families cited poverty as the main factor that pushes their

children to engage in labour. Studies (Basu & Van, 1998; Das, 2022; Edmonds, 2015; Gatsinzi & Hilson, 2022; Nengroo & Bhat, 2017), all find that relatively richer families would mostly take their children to school, and children in poorer households will have a higher likelihood of engaging in child labour.

4.2.2.4 Community characteristics

Community-level factors also significantly affect child labour. Coefficients of the variables “Presence of primary school and junior high school (JHS) in the community” were statistically significant and thus affect child labour status and child labour hours. They both have a negative impact on child labour in Ghana and particularly on rural children. This means that when children live in communities where there exist primary schools and JHS, there is less likelihood for them to be engaged in child labour, *ceteris paribus*. This finding is consistent with Owusu & Kwarteye, (2008) in Ghana and Abebe & Fikre, (2021) in Ethiopia, who find that having access to basic education reduces the financial burden on families, increasing the possibility that their children will continue their education rather than take up child labour. This is also similar to the results found in the child, parent and HH characteristics, where, education was seen to have a negative effect on child labour involvement.

Children in the Central, Volta, Eastern, and Brong Ahafo regions (where cocoa is grown) and the Northern and Upper East regions (where cocoa is not grown) are more likely to work than children in the Western region. Similarly, child labour practices are strongly linked to a child's place of residence ("RuralUrban"). Rural children are 6.9 percent more likely to engage in child labour than those living in urban areas. This study's findings are in line with those previously reported in the literature. Diallo, (2001) and (Grootaert, 1998), for example, claim that rural locations encourage child labour because they lack educational resources. As Webbink et al., (2012) have shown, urban areas often have superior road and transportation infrastructure as well as more governmental control. There's a chance that parents will feel under pressure to enrol their kids in school. It is estimated that 122.7 million rural children are working as child labourers, compared to only 37.3 million urban children, according to ILO & UNICEF, (2021). Child labour is almost three times more common in rural areas (13.9%) than in urban areas (4.7%). Economic activity, a community's unique culture, and the distance to a nearby school may account for some of the disparities across places.

5.0 CONCLUSION AND RECOMMENDATIONS

Increased global awareness of child labour has coincided with rising rates of child labour in many developing nations, particularly Ghana, where the severity of the problem cannot be overstated. The goal of this study is to gain insights into the prevalence and determinants of child labour, not only in the cocoa sector (as has already been investigated by several researchers), but also in the relatively poorest non-cocoa growing regions of Ghana. We contribute to the literature by conducting a quantitative analysis of the issue using nationally representative data gathered in the seventh round of the Ghana Living Standard Survey (GLSS7). The age range of interest for the study is 5-14 years, which is consistent with international and Ghanaian laws. The data presents several variables for regression analysis and this is done for all Ghanaian children, children in rural areas and finally, and children in rural communities in cocoa growing regions (CGRs) specifically.

First, the analysis of descriptive statistics shows that generally higher percentages of child labour are observed among children in non-cocoa growing regions (NCGRs) and non-cocoa growing households (NCGHs) in Ghana. Even higher percentages of child labour are observed for children in rural NCGRs and NCGHs in Ghana. Boys in all aspects (i.e. in Ghana overall, rural communities and rural communities in CGRs) are more involved in child labour than girls. Furthermore, the majority of these child labourers (82%) are found in the agriculture, forestry and fisheries sector. In addition, boys, rural child labourers and child labourers in NCGHs work more hours on average than girls, urban child labourers and children in CGHs. Finally, more child labourers were found to be from relatively poor households.

Second, the logit regression and Ordinary Least Squares (OLS) results show that, after controlling for several variables, children living in CGRs and CGHs work more hours and have a higher probability of being involved in child labour. Particularly, boys in these regions and households are more likely to be involved in child labour than girls. Also, children in households where a higher share of their income is derived from cocoa production are less likely to be involved in child labour. Other determining factors found to influence child labour participation and the hours of child work in Ghana are age, education of a child, being an orphan, presence of a father in the household, polygyny of household, household's possession of livestock and non-farm enterprises (NFEs), wealth index and the presence of primary school and secondary school in the community.

Furthermore, there were observed similarities and disparities between the results in the descriptive analysis and the regression results. First, for the household wealth index, children in poorer households were more likely to participate in child labour, which was also confirmed by the logit

results. Even though aggregately higher percentages of child labour among children in NCGRs and NCGHs were observed in the results of the descriptive analysis, the opposite was observed after the regression analysis as children found in CGRs and CGHs were more likely to participate in child labour. This is because CGRs and CGHs tend to be wealthier. This suggests that higher welfare levels from cocoa production decrease the need for child labour, while the higher workload associated with cocoa production increases this need.

This thesis has some research limitations. Interpretation of the data and results is difficult to extrapolate to other countries or other times. In this regard, it would be insightful to investigate how child labour has changed over the past decades in Ghana and how it will evolve in the future using methods including investigating scenarios, trend analysis, predictive approaches, etc. Also, the data captured child labour participation with a reference period of the past 7 days. This may not be enough to make general measurements because of long-term changes that may occur. Due to data availability, the study was unable to specifically show the activities that these child labourers are involved in either in CGHs or NCGHs. Further research should be carried out in Ghana to specify the exact activities these child labourers are engaged in.

Given the study's results, programmes aimed at reducing child labour in Ghana should not just target the cocoa industry but also include non-cocoa-growing regions. Through the Livelihood Empowerment against Poverty (LEAP) Program, the government of Ghana should help poor households (both in CGRs and NCGRs) with school-aged children by providing school uniforms, and learning materials and extending the already existing school feeding programme (SFP). Also, the Department of Social Welfare and the Metropolitan, Municipal, and District Assemblies (MMDAs) should work together to teach, warn, and encourage parents about the risks of letting their children do jobs like selling on the street rather than going to school. Moreover, NGOs and other government agencies, such as the Ministry of Gender, Child and Social Protection, should implement education, intervention, and enforcement programmes to put an end to child labour. People in rural areas, where poverty is known to be high, should be the main focus of these programmes. In order to protect children from exploitation, the Ghana Police Service and other law enforcement agencies must uphold all applicable laws (including the Human Trafficking Act, 2005 and the Children's Law, 1998, among others). This may be accomplished by ensuring that kids who are old enough to attend school do so. There should be checks and balances in place to identify and name parents and employers that knowingly involve children.

To that end, the Ghana Education Service should focus on sustaining the Free Compulsory Universal Basic Education (FCUBE) across the nation, but notably in the central, Brong Ahafo, Eastern and

Volta areas where poverty is extreme on many levels, child labour is common, and educational infrastructure is severely lacking. These regions should get special attention from the Ghana Education Service. It is imperative that we immediately address the very low priority given to education in the national budget, the need for parents to pay PTA (Parent Teacher Association) and other fees (Hilson, 2010), and the economic pressures that cause parents to put their children to work instead of attending school.

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APPENDIX

Table A1: Results of *ttest* for variables used in the regression

Variables	Definition	Children (5-14) No.= 20113							
		All children		Children in CGHs		Children in NCGHs			
		mean	se	mean	se	mean	se		
Dependent Vs									
Child Labour 7d	Dummy variable indicating if child is employed (Child labour) in past 7 days (1) or not (0)	0.132		0.155		0.166			
Child labour 7dhrs	Number of hours child worked in past 7 days	13.490	0.046	1.678	0.134	2.300	0.056	***	
Main Ind. Vs									
CocoaRegion	Dummy variable indicating if household is located in cocoa growing region (1) or not (0)	0.657	0.004						
CocoaProdHH	Dummy variable indicating if HH is involved in cocoa production (1) or not (0)	0.107	0.002						
Cocoa Income	Total value of income HH derives from Cocoa production in GH¢/1,000,000	1594.250	96.903	1817.958	115.586	0.519	0.266	***	
Log of cocoa income	Log of total value of income HH derives from Cocoa production in GHS	2.965	0.010	3.098	0.092	0.002	0.001	***	
Cocoa share income	Share of HH income derived from cocoa	0.016	0.067	15.643	0.681	0.002	0.001	***	
Control Vs									
Child level									
Age	Age of the child	9.455	0.028	9.378	0.069	9.443	0.020		
Age Squared	Squared of the age of the child	97.610	0.383	96.493	1.314	97.26	0.400		
Sex of child	Dummy variable indicating if child is female (1) or male (0)	0.476		0.512		0.467		***	
Number < 5y	Number of siblings less than 5 years old	0.682	0.021	0.955	0.083	0.853	0.022		
Number >= 5y	Number of siblings more or equal to 5 years old	6.265	0.054	9.201	0.204	7.400	0.055	***	
Childschool	Dummy variable indicating if child is in primary school or junior high (1) or not (0)	0.726		0.696		0.706			
Orphan	Dummy variables indicating if the child has neither parents present (1) or not (0)	0.118		0.126		0.116			
Father level									
AgeFather	Age of the father in years	29.142	0.164	31.631	0.523	30.865	0.167		
HH Presence	Dummy variable indicating if father is present in HH (1) or not (0)	0.644		0.691		0.675			
Father Educ	Dummy variable indicating if the highest qualification of the father is at least primary school (1) or not (0)	0.241		0.222		0.181		***	
Mother level									

AgeMother	Age of the mother in years	32.169	0.124	32.067	0.391	32.676	0.119	
HH Presence	Dummy variable indicating if mother is present in HH (1) or not (0)	0.839		0.824		0.845		**
Mother Education	Dummy variable indicating if the highest qualification of the mother is at least primary school(1) or not (0)	0.105		0.121		0.081		***
Household (HH) level								
HH head sex	Dummy variable indicating if the HH is headed by a male (1) or female (0)	0.710		0.792		0.747		***
Polygamous	Dummy variable indicating if HH is polygamous (1) or not (0)	0.087		0.031		0.131		***
Landholding	Size of land owned by the HH in acres	23.098	6.627	79.988	27.765	13.046	2.343	***
Livestock	Dummy variable indicating if the HH engage in livestock farming (1) or not (0)	0.418		0.597		0.526		***
NFE	Dummy variable indicating if the HH operates a non-farm enterprise (1) or not (0)	0.516		0.421		0.011		***
HH asset index	Index of living conditions	0.246	0.009	0.036	0.022	-0.122	0.007	***
Mining	Dummy variable indicating if the HH engages in mining (1) or not (0)	0.003		0.004		0.003		
Community level								
Presence Primary	Dummy variable indicating if there is a primary school in the community (1) or not (0)	0.849		0.743		0.781		***
Presence JHS	Dummy indicating if there is a junior high school in the community (1) or not (0)	0.625		0.549		0.519		**
Distance Motor road	Distance from the community to the closest motorable road (km)	0.010	0.003	0.009	0.01	0.009	0.002	
RuralUrban	Dummy variable indicating if the community is an urban (1) or rural (0) one	0.410		0.126		0.290		***
Other control variables								
Coastal ecological zone	Dummies variable indicating if the child is in the coastal ecological zone	0.208		0.096		0.162		***
Forest ecological zone	Dummy variable indicating if the child is in the forest ecological zone	0.448		0.872		0.262		***
Savannah ecological zone	Dummy variable indicating if the child is in the savannah ecological zone	0.301		0.033		0.552		***
Regions								
Western	Dummy variable indicating if the child lives in Western region	0.095		0.2589		0.059		***
Central	Dummy variable indicating if the child lives in Central region	0.087		0.174		0.072		***

Greater Accra	Dummy variable indicating if the child lives in Greater Accra region	0.124	0	0.0616	***
Volta	Dummy variable indicating if the child lives in Volta region	0.102	0.042	0.109	***
Eastern	Dummy variable indicating if the child lives in Eastern region	0.114	0.2146	0.0708	***
Ashanti	Dummy variable indicating if the child lives in Ashanti region	0.164	0.114	0.072	***
Brong Ahafo	Dummy variable indicating if the child lives in Brong Ahafo region	0.095	0.196	0.07	***
Northern	Dummy variable indicating if the child lives in Northern region	0.129	0	0.192	***
Upper East	Dummy variable indicating if the child lives in Upper East region	0.033	0	0.131	***
Upper West	Dummy variable indicating if the child lives in Upper West region	0.033	0	0.131	***

Comparisons are made between children of living in cocoa growing household and children living in non-cocoa growing households using a two-sided *t*-test for the continuous variables and dummy variables. ****p* < 0.01; ***p* < 0.05; **p* < 0.1.

Cocoa supply chain and child labour in Ghana.

Submitted by : Freeman Nsoh Akaribo

Child labour in the cocoa supply chain in Ghana has been a subject for various research amidst implementation of policies and programmes aimed at its eradication. However, it is not clear to what extent child labour is specifically linked to the cocoa supply chain, or whether it is related to broader welfare issues. This distinction is important as it requires different policy solutions to tackle child labour. Using the seventh round of the Ghana Living Standard Survey (GLSS7), this thesis compares child labour prevalence between cocoa growers and non-cocoa growers at the regional and household level. A binary logistic regression model and ordinary least squares were applied to examine determinants of child labour participation and child labour working hours for children aged 5–14. The findings from the descriptive statistics show higher percentages of child labour among children living in non-cocoa growing regions and households. Children living in rural areas and poor households constitute a larger portion of child labourers in Ghana. However, after controlling for child, parent, household and community characteristics in the regression analysis, children living in cocoa growing regions and households are more likely to participate in child labour. Other variables like age, education of children and their mothers, household poverty status and presence of educational infrastructure play a vital role in child labour participation and working hours in Ghana. It is recommended that poverty reducing initiatives and social protection programmes should target the rural poor not only in cocoa growing areas but in non-cocoa areas as well. Educational infrastructure should be extended to all parts of the country to compensate the efforts of the Free Compulsory Universal Basic Education.