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Child labour on cocoa farms: a case study of Sefwi-Wiawso district in Western region of Ghana

Master thesis

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Declaration

"I hereby declare that I worked on my Master thesis Child labour on cocoa farms: a case study of Sefwi-Wiawso district in Western region of Ghana by myself and that I used only literature resources listed in references."

23rd April 2015, Prague .....

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Abstract

Child labour on cocoa farms: a case study of Sefwi-Wiawso district in Western region of Ghana

This thesis was focused mainly on the contribution of household income, number of farmers' children and farmers' education to probability of a child's involvement into work on cocoa farm. Thesis also analyzed causes of child's involvement into work on cocoa farm; determined activities children carry out on cocoa farm, detected the number of children in child labour and analyzed effects of farming activities on education. Research was conducted in Sefwi-Wiawso district in Western region of Ghana. A logit model was used to determine the significance and magnitude of contribution of household income; number of farmers' children and farmers' education to probability of a child's involvement into work on cocoa farm. Number of farmer's children was the only factor which had a real impact on child's involvement into work on cocoa farm. Household income and farmers' education did not have a real impact on child's engagement into cocoa farming activities. Main cause of child's involvement into work on cocoa farm was to help family with work. Total share of working children in child labour was 96% and 68% working children carried out impermissible activity by age. Work on cocoa farm had a low effect on school attendance of child.

Keywords: child rights, cocoa production, education, farming activities, household income, logit model, school attendance

Abstrakt

Dětská práce na kakaových farmách: případová studie z oblasti Sefwi-Wiawso v Západnom regione Ghany

Diplomová práce byla zaměřena zejména na dopad faktorů jako výše rodinného příjmu, počet dětí a vzdělání farmářů na využívání dětské práce na kakaových farmách. Práce analyzuje také příčiny využívání dětí v pracovních procesech na kakaových farmách, zjišťuje počet pracujících dětí v dětské práci, popisuje aktivity, které děti vykonávají na kakaových farmách a analyzuje dopady těchto aktivit na jejich vzdělání. Výzkum byl proveden v oblasti Sefwi-Wiawso v Západním regioně Ghany. Pro určení významu a výše vlivu faktorů jako rodinný rozpočet, počet dětí, které rodiny vychovávají a vzdělání farmářů na pravděpodobnost zapojení dětí do práce na kakaových farmách byl použít logit model. Počet dětí ve farmářských rodinách byl jediný faktor, který měl opravdový dopad na jejich zapojení na kakaových farmách. Příjem rodin a vzdělání dospělých farmářů příliš nerozhodoval. Celkový podíl pracujících dětí v dětské práci byl až 96% a 68% pracujících dětí vykonávalo takový druh práce, který byl nevhodný k jejich věku. Práce dětí na kakaových farmách neovlivnila příliš účast dětí ve školní docházce.

Klíčová slova: dětská práva, produkce kakaa, vzdělání, farmaření, rodiný příjem, logit model, školská docházka

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List of the contractions used in the thesis

COCOBOD	Ghana Cocoa Board
CRADA	Child Research for Action and Development Agency
FCUBE	Free Compulsory Universal Basic Education
GDP	Gross domestic product
GHS	Ghana Cedis
GSS	Ghana Statistical Service
ILO	International Labour Organization
IPEC	International Programme on the Elimination of Child Labour
MESW	Ministry of Employment and Social Welfare
MMYE	Ministry of Manpower, Youth and Employment
UN	United Nations
UNCRC	United Nations Convention on the Rights of the Child
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States Dollar
WB	World Bank

1 Introduction

Ghana is one of the leading cocoa producing countries and it is the most successful exporter of all cocoa producing countries. Cocoa is cultivated in six regions out of ten Ghana's administrative regions (WB, 2011). Cocoa production plays an important role in rural employment of Ghana.

Cocoa is grown mainly on small family farms (Asante-Poku and Angelucci, 2013). Approximately 800,000 farm families are involved in cocoa production (COCOBOD, 2015). Cocoa production is a labour intensive activity and farmers often incorporate into the work on cocoa farm their children. Estimated share of children involved in the work on the family farm is around 95% (Berlan, 2004). Number of children engaged in cocoa farming activity in Ghana is not identified (MMYE, 2008).

Engagement of child into work on cocoa farm has a negative impact on child's education and learning achievement (Ravallion and Wodon, 2000). More than half of children living in cocoa growing communities can not read and write (MMYE, 2008).

First part of this thesis introduces the problem of child labour on cocoa farms in Ghana and tries to explain effect of child's involvement into cocoa farming activities on child's education and learning achievement from several points of view.

The main aim of this thesis is to assess the contribution of household income; number of farmers' children and farmers' education to probability of a child's involvement into work on cocoa farm. A logit model is used to determine the significance and magnitude of mentioned factors. Particular aims analyze causes of child's involvement into work on cocoa farm; determine activities children carry out on cocoa farm, detect the number of children in child labour and analyze effects of farming activities on education.

Methodological part describes studied area, Sefwi-Wiawso district in Western region of Ghana, where the research was conducted. This part of the thesis also describes and explains used research methods.

Results of the thesis show empirical findings acquired during elaboration of this thesis. Causes of child's inclusion into work on cocoa farm, activities children carried out on cocoa farm as well as effect of work on cocoa farm on child's education are described there. Analytical part of this chapter defines results of the main research question.

Discussion chapter compares results of this thesis with already ascertained findings of other studies.

2 Literature Review

2.1 General information about Ghana

Ghana, officially Republic of Ghana, is located at the coast of West Africa, along the Gulf of Guinea. Surface area of Ghana is 238,540 km^2. Country borders with Ivory Coast, Burkina Faso and Togo. Ghana was colony of the United Kingdom until 1957. Now it is a sovereign multinational state and unitary presidential constitutional democracy. Capital city is Accra, situated in Greater Accra region, the smallest but the most densely populated region of Ghana (Ghana Web, 2015).

Population of Ghana is 25,904,598 people with density 114 people/km^2 (WB, 2006). The most populous region is Ashanti (19.4%) followed by Greater Accra (16.3%). Distribution of population between rural and urban areas is almost uniform, 53% of citizens live in urban areas and 47% in rural areas.[1] Level of urbanization varies by regions. Highest share of urban population is in Greater Accra region (90.5%). Another nine regions have predominance of rural population (GSS, 2012).

Origin of the population is mainly Ghanaians by birth (93.7%). The main ethnic groups are Akans (47.5%) followed by smaller ethnic groups as Mole Dagbani, Ewe, Ga-Dangme and Mande (GSS, 2012).

Majority of the population are Christians (71.2%). Second main religion is Islam which is dominant in the Northern region. Minority of the population believes in traditional religion (GSS, 2012).

The official language of Ghana is English. High share of population is able to read and write in English (67.1%). As many ethnical languages are in Ghana, more than half of the population is able to read and write in at least one Ghanaian language (GSS, 2012).

Mean annual growth of population is 2.5%. The higher fertility rate and lower mortality rate caused the unequal age structure and increase of population under productive age. Children create 42.2% of household members. Households are mainly male-headed but women predominate in Ghana. Except the distribution of males and females in Western region which is almost the same (GSS, 2012).

More than half of the population aged 5 years and older is economically active. Only 5% of economically active population is unemployed with prevalence of females. Population is mainly employed in private sector or they are self employed (GSS, 2012).

[1] Localities with less than 5000 inhabitants are defined as rural areas (GSS, 2014).

Medium human development index positions country at 138th place in human development (UNDP, 2014). Country is ranked as lower income. More than half of the population still live below absolute poverty line with less than 2 USD per day (WB, 2013).

GDP per capita is growing significantly since 2006. Nowadays GDP is four times higher than ten years ago. The highest GDP distribution comes from services sector (49%) followed by industry sector (29%) and agriculture sector (22%) (WB, 2013). Despite agriculture sector generates the smallest part of GDP, it plays an important role in Ghanaian economy. Agriculture sector employs 60% of population (WB, 2012).

2.2 Cocoa production in Ghana

Cocoa tree grows in fifty countries and provides income for small farmers of countries in tropical humid climate. West Africa contributes to 70% of all cocoa world production. In 2010, Ghana was the second biggest cocoa producer. One fifth of all world cocoa production was produced in Ghana. Today, Ghana occupies a third place in world cocoa production after Indonesia and Ivory Coast. Cocoa production generates 9% of agricultural GDP and it is a major contributor of GDP. Ghana is the most successful exporter of all cocoa producing countries (WB, 2011).

Cocoa production has played an important role in significant economic growth (Breisigner et al., 2008) as well as in the development of the country and poverty alleviation strategies (Kolavalli and Vigneri, 2011). Between the years 2001 and 2003 cocoa production dramatically increased. The rise of production in recent years was caused by increase of fertiliser use and beginning of government sponsored mass-spraying exercise (Vigneri, 2007).

Cocoa is cultivated in six regions (out of ten Ghana's administrative regions) where the climate conditions and land properties are the most convenient for cocoa growth. These regions are Ashanti, Brong-Ahafo, Central, Eastern, Western and Volta region. Thirty years ago Ashanti and Brong-Ahafo regions dominated the cocoa supply. Nowadays, Western region contribute to the more than half of all Ghanaian cocoa supply (WB, 2011).

Cocoa is one of Ghana's main exports. High quality cocoa places country between leading producers of cocoa. Quality maintenance of cocoa and wellbeing of the farmers and their families are the main aims of the COCOBOD (Kolavalli and Vigneri, 2011).

2.2.1 Ghana Cocoa Board

Ghana Cocoa Board (COCOBOD) focuses on the production, processing and marketing of good quality cocoa, coffee and shea nut. The board has several programmes in order to achieve sustainability of cocoa production in Ghana and to help the farmers to face their daily challenges. Farmers are provided with trainings related to preservation of cocoa trees. In addition, COCOBOD also orientates on well-being of cocoa farm families (COCOBOD, 2015).

The social initiatives of the board aim mainly to the better education of farmers and their children and to the increase of involvement into cocoa farming. COCOBOD granted the building of secondary schools across Ghana in order to keep young living in their district. The projects of the board lead to the higher interest of students into cocoa farming and to the facilitation of student's life so they can go to school regularly. The board provided free computers to the schools, they installed solar streetlights to ensure that children from the houses without electricity have opportunity to read in the evening and they also provided solar boreholes for the villages to simplify the fetching of the water and so safe time for schoolable children. COCOBOD sponsors every year farmers with scholarships for the education in second cycle schools (COCOBOD, 2015).

COCOBOD also takes care about health care of the farmers. The board established four health centres in the cities and one hospital in the smaller city for the people which before had to travel far away for medical examination (COCOBOD, 2015).

2.2.2 Families engaged in cocoa farming

Cocoa production plays a crucial role in rural employment of Ghana. Despite the continuing tendency of young people and people with higher education to move into the urban areas and abandon cocoa farms, approximately 800,000 farm families are still involved in cocoa production (COCOBOD, 2015).

Cocoa farmers are mostly smallholders which possess their own land. It is estimated that 350,000 farmers are owners of the cocoa farms (Anim-Kwapong and Frimpong, 2004), but only 38% of them have the legal title of land ownership. Cocoa farms are usually small with mean land size two to three hectares (WB, 2011).

For smallholder farmers cocoa production creates up to 70% of their total annual household income. Most cocoa farmers are dependent on income from the cocoa production. The median of their annual household income from cocoa production is

716 GHS, while median of the annual household income from other crop production is only 80 GHS. Therefore according to Hainmueller et al. (2011) one member of the family engaged in cocoa farming lives with less than 1 GHS per day (= 0.31 USD) (Hainmueller et al., 2011). Cocoa production and post production activities are source of income also for people involved in trade, transport, processing and other additional activities.

Over 90% of cocoa is grown on small family farms (Asante-Poku and Angelucci, 2013). Cocoa production is a demanding activity and requires a lot time and work. It is a labour intensive activity. Farmers incorporate into the work on cocoa farm not only hired labour but also family members. Ministry of Manpower, Youth and Employment (2008) found out that children working on the cocoa farms are mainly from cocoa farm families.

Average household of cocoa farmer has 5 members, formed of farmer, his wife and three children. Only 24% of farmers are currently not married (Hainmueller et al., 2011) and 60% of all cocoa farmers are over 50 years old (Anim-Kwapong and Frimpong, 2004).

Labour and time needed for cocoa production varies depending on the month of the year. At the beginning of the year, since January till March, farmers dedicate to cutting down parasites and planting new trees. All year activity, weeding, is required mainly in June and July. Since April till August farmers applies pesticides and in June fertilizers. Harvesting takes place since August till December. During harvest season all family is involved into farming. Children are engaged in several farming activities. They do weeding and also cutting, gathering and carrying of pods. Women normally cook for workers and they fetch the water. Sometimes farmers hire external labour during labour intensive harvest season or to perform certain task (Bøås and Huser, 2006).

During the harvest season children participation in the farm tasks increase and they go to the farm not only during weekends or their free time (Bøås and Huser, 2006). For the children age 5 to 12 years it is common to make weeding, gathering and carrying of pods or fetching water for spraying. Older children are engaged in harvesting and pod breaking (MMYE, 2008).

To engage children in farming activities is an old tradition in Ghana and the way of skills transmission from parents to their descendants. Children are preparing to take over farming when their parents will not be able to carry out farm duties (MMYE, 2008).

2.3 Child labour

The number of working children worldwide is around 168 million. Half of them carry out hazardous works and face the worst forms of child labour (ILO, 2015). Majority of them, 60%, work in agriculture. Only one of five children is paid for the work. In the most cases children are family workers (Education International, 2013).

Eliminating processes of child labour carried out by International Labour Organization (ILO) started in 1919. The ILO International Programme on the Elimination of Child Labour (IPEC) started in 1992. IPEC programmes run in 75 countries where hundreds of thousand children were removed from labour (ILO, 2010).

In the World Report on Child Labour (IPEC, 2013) was estimated the number of child labourers around 215 million worldwide. The same year later in the Marking Progress against Child Labour (IPEC, 2013) the new estimated number of children in labour was 168 million. The number of working children is decreasing. In Latin America every one of ten children in age 5 to 17 years is involved in child labour. In Asian-Pacific region every one of eight children works (ILO, 2010). The highest amount of child labourers, 59 million children, is in Sub-Saharan Africa (IPEC, 2013) where every one of four children in age 5 to 17 years is involved in some economic activity (ILO, 2010).

2.3.1 Definition of child labour

According to the UN Convention on the Rights of the Child (1989), child is any person younger than 18 years. Child labour is defined as any economic activity or work children perform, unless it is carried out at own home and does not influence child's growth. It means child is not exposed to the harm of health, can accomplish the education and the activity carried out by child is safety (Education International, 2013).

There is a difference between two approaches, child labour and child work. As it was mentioned above, child labour interferes with child's education, health, development and morals. On the other hand, child work can be beneficial not only for child's household in form of income or help but also for child's future. Child can be enriched with skills, experience and work ethic (World Vision, 2009).

Boundaries of work undertaken by children are defined in ILO Convention 138 and ILO Convention 182 (Education International, 2013).

ILO Convention 138 or Convention on minimum age for admission to employment was established in year 1973. It declares the minimum age for employment as the age

when child complete the compulsory education. It varies across countries, but it should not be less than 15 years. In countries with less developed education system it is often 14 years. However, in countries, where the minimum age is 15 years national laws or regulations may permit the employment or work of persons at the age since 13 till 15 years which does not interfere with child's education and are not harmful for health and development of child, either. In less developed countries with lower minimum age, 14 years, employment of child is also allowed since the age 12 till 14 years (ILO, 1973).

ILO Convention 182, settled in the year 1992, specifies the worst forms of child labour and its prohibition and elimination. The worst forms of child labour are defined as works which are in conflict with morals and safety. It can cause damage in child's growth, education and health. This works or activities are also called hazardous works. The worst forms of child labour are related to slavery, armed conflict, child trafficking, forced works, debt bondage, prostitution, pornography or illegal activities as selling drugs (ILO, 1999).

According to UNCRC (UN, 1989), children have right to be protected from the hazardous works or any work which is dangerous for child's physical or psychical condition. Children also have right to be protected from the work or activities that interfere with education and child's development.

2.3.2 Conceptual frame for child labour

Child labour can be as economic as non-economic activity including as well household duties (see Figure 1).

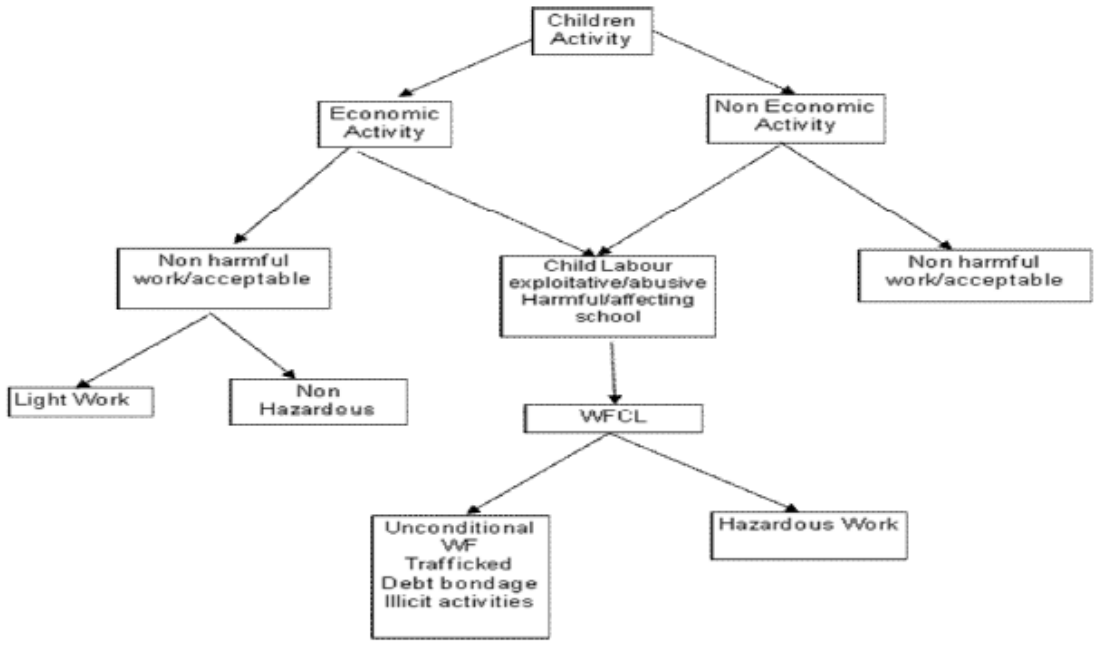

Figure 1: Division of children's activity (Amoo, 2008)

According to the System of National Accounts (1993), economic activity is any work or activity performed during a specified period for profit or for family gain. It can be full time or part time work, legal or illegal work, casual or regular work, paid or unpaid work. From the perspective of child labour, activity is considered to be economic when child spend working at least one hour during a seven day period. It is called a market economic activity when economic activity is performed on the market as a sale of goods or services (Amoo, 2008).

Non-economic activities include works that benefit household and its members (cooking, cleaning, care of family members etc.) as well as community service, volunteering and non productive activities (education, leisure, training etc.). Non-economic market activities count for production of goods (agricultural production, tailoring, pottery etc.) and household chores (reparations, renovations etc.) (Amoo, 2008).

ILO Convention on minimum age for admission to employment (ILO, 1973) declares that national laws or regulations may permit the employment or work of persons at the age between 13 and 15 to do light works. Light work is any economic activity which is not harmful and allow child personal development without affect to their health and schooling. Light works contribute to the welfare of household and enrich child with skills and experience. It includes activities as helping parents with their business or around the house (Amoo, 2008).

Worst forms of child labour are defined in ILO Convention 182 (ILO, 1999). There are two categories: the first one is called "by definition" and the second one "by condition". Unconditional worst forms, "by definition", are illegal activities in conflict with law and morals (slavery, prostitution, trafficking, debt bondage, armed conflict etc.) while hazardous works, "by condition", can be any economic activities, illegal or legal, which are in conflict with child's safety and health. Children are exposed to the hazardous tasks and works are carried out in dangerous circumstances (Amoo, 2008).

2.3.3 Causes and consequences of child labour

The reasons of child's involvement into work are very specific in each family and environment where child grow up. In general, the most often causes are poverty (IPEC, 2013) and lack of access to free, compulsory education (Education International, 2013).

Andvig (2001) associates child labour with poverty claiming that child labour is highest in poorer regions. Therefore child labour is mainly explained by poverty. Poor

families have to struggle every day and sometimes the child's income is relevant for survival. Children whose parents are unable to earn money are pushed to the work no matter the education. Drivers of poor families are illness or death of some active family member, decrease of salary, high number of household members, family debts or bad harvest (Education International, 2013).

Agbefu (2010) described that level of parents' education influence if children would work or not. Children's of parents who worked during their childhood are more likely to be in child labour.

Child labour is also related to the lack of education system and teaching materials. In areas where the schools are absent and compulsory education does not exist, the child labour is higher (Education International, 2013). In female headed families, where the income is typically smaller, mothers are unable to cover costs for education (such as school fees, uniforms and books) and children are taken out of school in order to work (Berlan, 2013).

The lack of employment laws, regulation and minimum age legislation permits employers employ children without any consequences. Poor labour inspections only support the child employment (Education International, 2013).

In developing countries the culture and socio-cultural context have important weight and child labour is a part of socialization (MMYE, 2007). Traditional habits such as girls have to take care about household and children work together with parents, are common in these societies (Education International, 2013). On the other hand child labour is considered to be a process of socialization which enrich child with skills and so make a child employable (Grootaert and Kanbur, 1995).

Children in child labour are more often vulnerable. They are cheap source of labour. Children's wages are low, sometimes below the level of a living wage. Child labour causes lower wages in district and repeated cycle of household poverty (Education International, 2013).

Working children often do not attend the school because they do not have the opportunity, they have to leave school prematurely or they can not combine study with work. Because of uncompleted education they have less job opportunities. They have limited skills and experience. Child labour influences not only their education but also mental and physical development. These children might face the loss of dignity and confidence (Amoo, 2008).

2.4 Child labour in Ghana

Since the year 2000 Ghana started the programme on the elimination of child labour. During this period a couple of laws and policies were establish to protect children from abuse. The aim was to ensure children's development, health and access to education. In order to achieve this aim serve National Plan of Action (MESW, 2009).

First National Plan of Action was set in 1992 and ratified by UN Convention on the Rights of the Child. Ghana was one of the first countries which ratified UN Convention on the Rights of the Child. National Plan of Action was followed by other strategies and programmes with same purpose were ratified by Government (MESW, 2009).

Even thought Ghana signed the ILO Minimum Age Convention (No. 138) in the year 1973, the weight of the Convention was pointed out in the Ghana: Act No. 560 of 1998, Children's Act (MESW, 2009). Children's Act of 1998 (Act 560) established exclusion of child's involvement in any form of employment under the age of 15. Children under the minimum working age are supposed to be in school and they are permitted to carry out only light family works in the age of 13 to 15 (National Legislative Bodies/National Authorities, 1998).

ILO Worst Forms of Child Labour Convention (No. 182) was signed by Ghana in the year 2000. According to the Government of Ghana, elimination of the worst forms of child labour might provide sustainable development and higher living standard (MESW, 2009).

Early Child Development Policy of Ghana sets the completed primary education at the age of 11. Child at this age can start to carry out light works during attending the Junior High school. Hazardous Child Labour Activity Framework for Ghana and National Plan of Action recommends the age of 12 years as the minimum age for light work (GSS, 2014).

Hinson-Ekong (2006) found out during her research that Ghanaians consider a child any person younger than 12 years (GSS, 2014). Hinson-Ekong (2006) also noticed that due to the faster maturing of children in rural areas the contribution to the social and economic activities is higher comparing to their peers from the city (Amoo, 2008).

Berlan (2004) mentioned that Ghanaians think that child labour is related with diligence. As one Ghanaian saying states: "Lazy man no chop" (chop means eat). In Ghana involving of children in work is a part of socialization and a proof of responsibility and maturity (Berlan, 2004). Child which does not help with basic household chores is considered to be lazy and misbehaved (Casely-Hayford, 2004).

Child labour is found almost in all sectors of Ghanaian economy. The highest share of working children is found in agriculture (GSS, 2014). Child labour is happening mainly in family agricultural enterprises and it is unpaid (Canagarajah and Coulombe, 1999). Children in agriculture at young ages are typically involved in weeding and tasks which do not require a grown stature (Edmonds and Pavcnik, 2004).

According to the GSS (2014), the proportion of children in the age from 5 to 17 years involved in child labour is 21.8% (1,892,553 children). Out of all children in child labour, 65% are in hazardous works (1,231,286 children) (see Figure 2).

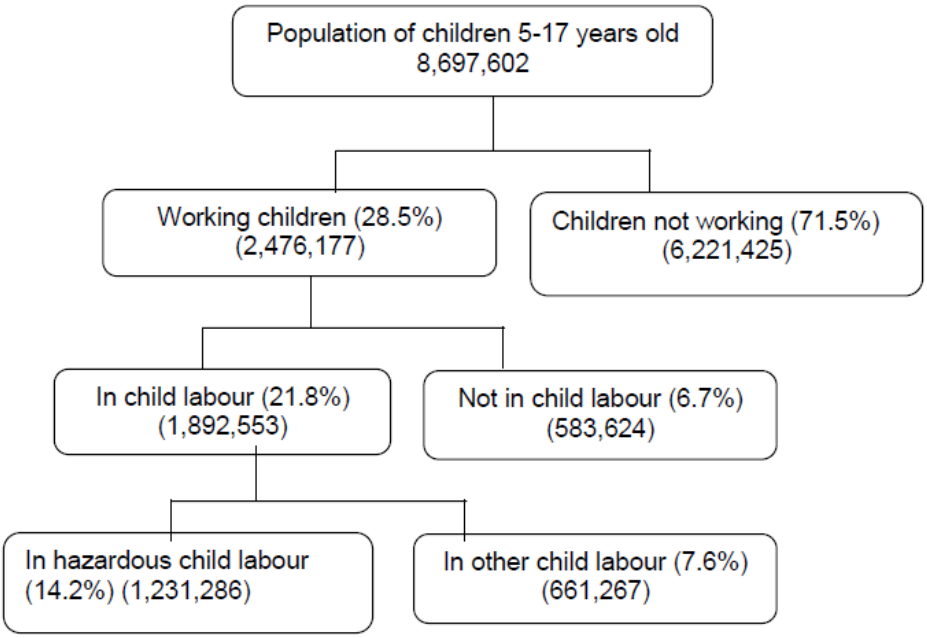

Figure 2: Division of working children at the age 5 to 17 years (GSS, 2014)

The main industry where children are employed is agriculture including fishery and forestry. This industry employs 78.7% of total children in employment (GSS, 2014). Children whose parents are involved in agriculture as self employed are more likely to work than children from non-agriculture families (Canagarajah and Coulombe, 1999). Work in agriculture in not judged unusual and child labour is considered to be normal and part of family life (Tuakli et al., 2006).

The second industry, which employs 12.7% of working children, is wholesale and retail trade. While agriculture, fishery and forestry has higher impact on child's employment in rural areas, wholesale and retail trade employs mainly children from urban areas (see Table 1).

Table 1: Employed children old 5 to 14 years by industry, location and sex (GSS, 2014)

	Urban			Rural			Ghana		
Industry	Male	Female	All	Male	Female	All	Male	Female	All
Agriculture, forestry and fishing	64.3	41.7	52.0	91.4	85.4	88.6	84.9	72.2	78.7
Mining and quarrying	0.0	0.0	0.0	0.6	0.3	0.4	0.4	0.2	0.3
Manufacturing	6.2	7.3	6.8	2.0	1.8	1.9	3.0	3.5	3.2
Construction	0.1	0.7	0.4	0.1	0.1	0.1	0.1	0.3	0.2
Wholesale and retail trade	21.1	36.6	29.6	4.1	9.1	6.4	8.2	17.4	12.7
Transportation and storage	1.3	0.2	0.7	0.0	0.0	0.0	0.3	0.1	0.2
Accommodation and food service activities	4.7	10.2	7.7	0.4	2.1	1.2	1.4	4.5	2.9
Information and communication	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.1	0.1
Arts, entertainment and recreation	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0
Other service activities	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.1
Activities of households as employers	2.2	2.6	2.4	1.5	1.1	1.3	1.6	1.6	1.6
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The 92.2% of all children in agriculture work 50-59 hours per week (GSS, 2014). Children on average earn only one sixth of adult's salary (Canagarajah and Coulombe, 1999). Agriculture and fishery workers have the lowest earning per hour compared to other occupation. Their mean hour earning is 0.72 GHS while sales workers have on average 1.17 GHS (GSS, 2014).

In Labour Regulations of Ghana (Parliament of the Republic of Ghana, 2007), paragraph Employment of young persons in hazardous work, is mentioned that young person shall not be employed in work which include manual lifting of loads over 25 kg, work in scaffold and in heights over 2.5 metres, using dangerous chemicals, felling of timber or work in environment with excessive noise, poisonous gases or fumes. Children working in agriculture, forestry and fishing (78.7%) could carry out some work in contrary with these regulations.

In Ghana, children are engaged in certain household activities. The household activities such as taking care of children (siblings) and cooking, the most often occupy children aged 5 to 14 years. Other usual household activities carried out by children are fetching water, running errands, washing dishes, collecting firewood, washing clothes, ironing, cleaning, shopping, taking care of elderly, taking care of sick, collecting food from the garden and helping children (siblings) with school works (GSS, 2014). Children carry out these non-economic activities before and after school, on weekends and during holidays (Krauss, 2013). Rural population in age 5 to 14 years spend more time doing household activities, except the activities as shopping and ironing which take more time to

their peers in urban areas (GSS, 2014). During the research Krauss (2013) observed that interviewed children on average spend 1 to 1.5 hours per day on household chores.

2.4.1 Child labour on cocoa farms

Number of working children on cocoa farms in Ghana is not identified (MMYE, 2008). An estimate of Tulane University (2009) from survey conducted in 2008/2009 mentioned 997,357 working children in cocoa sector (approximately 11% of all children aged 5 to 17 years).

In Ghana cocoa farming is a family enterprise (Baah, 2010). Berlan (2004) estimates that 95% children of cocoa farmers are involved in the work on the family farm. Some of them are also attending school and they carry out light works after school or during weekends and holidays. Instead of paying hired labour farmers engage their children into farm activities so they can afford to pay them education. According to Zdunnek et al. (2008) children work mostly on family farms without any financial expectations.

The most often causes of child's involvement into work on cocoa farm are skill transfer to child, socialization, babysitting of siblings, ensuring of child's economic future, lack of adult labour, financial issues (poverty) and child's contribution to the household (Bayer, 2014).

Cocoa farm activities carried out by children differs by age and gender. Majority of them does gathering of pods (84-89%) followed by carrying water for spraying, bean scooping, weeding and carting fermented beans (Amoo, 2008). By the age of four are children engaged in easy tasks as babysitting of their siblings at home while family members go to the farm. At the age of ten are children already assisting family members on the farm and they do weeding, fetching water or carrying pods (Casely-Hayford, 2004). Children participate on the farm mainly during weekends (Amoo, 2008).

High number of children is exposed to hazardous works. These common health hazards are carrying loads, using cutlass, spraying pesticides and applying fertilizers. While using cutlass, 60% of children have suffered from some injury (Amoo, 2008). Nevertheless, caretakers claim their unfamiliarity with this possible danger (Baah, 2010).
Baseline Survey Analytical Report (CRADA, 2012) determines three categories of children working on the cocoa farm. Children who work on the farm full time without attending school. Children who combine school with part time work on the farm in order to

support family. Children who attend the school regularly and at the same time work on the farm mainly in their leisure. In Ghana the most often children go to school regularly and occasionally skip the classes to help their caretakers on the farm.

Casely-Hayford (2004) also identifies children sent to another household for farming purposes. Detection of these children was rare in visited communities (eleven communities in six districts: Suhum-Kroboa-Coaltar, Hohoe, Wassa Amenfi, Ejusu-Juaben, Effiduase and Asikuma Odoben Brakwa).

Relatives as cousins, uncles, siblings or grandparents are important part of child's socialization. As socialization of child is a collective social responsibility, it is common that child is sent to another family (Baah, 2010).

2.4.2 Permissible works for child engaged in cocoa farming

According to farmers some works on cocoa farm are not suitable for children and young children aged 6 to 12 years have not enough strength and skills to do some works. During weeding they can have difficulties to recognize weed and young trees or while opening pods they can damage the beans. Children up to 12 years can already participate in more activities (Bøås and Huser, 2006).

Even though cutlass is sharp and children might hurt themselves, farmers claimed that children know how to use it and sometimes are even more careful than adults. Some physically hard works such as applying pesticides farmers do not allow children to carry out (Bøås and Huser, 2006).

Ministry of Manpower, Youth and Employment (2008) set permissible tasks children can perform on cocoa farm according to their age. At the age of 5 to 7 years child can accompany their parents to the farm but only during weekends or holidays and under the adult supervision. However at this age children can not carry out any activity on the farm. Children at the age of 8 to 11 years can help with cooking, running farm errands, babysitting on the farm, picking up cocoa pods and uprooting weed around young cocoa trees under the adult supervision. After adequate training but still under adult supervision child old 12 to 14 years can fetch water for spraying, fill nursery bags with black soil, gather cocoa pods, carry minor loads, water seedlings at the nursery and remove beans. Later on at the age of 15 to 17 years it is permitted to involve child in weeding with appropriate cutlass (small cutlass), hand plucking of pods accessible from the ground,

breaking of pods with mallet or by hit, assisting in cocoa planting and carrying of loads but still under the adult supervision and after adequate training (see Table 2).

Table 2: Permissible works and recommendations by age (MMYE, 2008)

AGE GROUP	CODE	ACTIVITY/TASK	RECOMMENDATION
5- 7	2.1	May accompany parents to the farm during weekends or holidays but do not undertake any specific task	Under adult supervision
8-11	2.2	Assist in taking care of babies and toddlers on the farm	Under adult supervision
	2.3	Helping in cooking and serving food	
	2.4	Running farm errands	
	2.5	Picking harvested pods from under cocoa trees in the company of adults	
	2.6	Uprooting weeds around young cocoa plants	
12-14	2.7	Filling of Nursery bags with black soil	Adequate training Under adult supervision
	2.8	Fetching water for spraying and leaving the farm before spraying commences	
	2.9	Gathering of cocoa pods	
	2.10	Scooping and removal of beans	
	2.11	Carting minor loads(see permissible carrying load standard in Table 10.2)	
	2.12	Watering of Seedlings at the nursery	
15-17	2.13	Assisting in planting cocoa	Adequate training Under adult supervision
	2.14	Weeding/brushing undergrowths with age -appropriate cutlass (Sua-ado or small cutlass)	
	2.15	Plucking within hand-reach pods	
	2.16	Breaking cocoa pods with breaking mallet or hitting on the ground	
	2.17	Carting load (See Table 10.2)	
	2.17.1	➢ Seedling for planting	Carrying weight should not exceed 30% bodyweight for more than 2miles(3 Km)
	2.17.2	➢ Water for spraying	
	2.17.3	➢ Cocoa pods for heaping	
	2.17.4	➢ Fermented beans to drying mat	
	2.17.5	➢ Dry beans for sale	

MMYE (2008) determines certain recommendations for child's participation on cocoa farm. According to MMYE child has to wear protective clothes (long leaves, trousers, long dress), boots (slippers are not adequate footwear) and during sunny days also hat. Adults have to train children, control them and ensure them drinking water. Under the age of 11 years child can not use cutting tools. Maximum loads child can carry is 30% of body weight whereas distance can not exceed 3 km. Child can lift maximum 50% of the body weight. Child can not apply pesticides under the age of 18 years. Children at the age of 12 years can carry out light works for maximum 2 hours per day (or 3 hours with break

10 minutes every hour). Schoolable children are supposed to be at school and they can not skip classes because of the farming. Even though child achieve 18 years can not be involved in all farm activities until the training is completed.

2.4.3 Child labour on cocoa farm and schooling

During the harvest period since August till December cocoa farming is the most labour demanding. Children accompany their parents, grandparents and other family members on the cocoa farm mainly on weekends and during holidays. Once they are on the farm they spend there from 4 to 8 hours (MMYE, 2008). In order to save some money and pay child's education, farmers use their own children for the work on cocoa farm instead of hired labour (Berlan, 2004).

Also Casely-Hayford (2004) found out that child's engagement into farm activities is more intensive during harvest season. Some children work 3 days per week even thought they are schoolable. Intensity of work depends on the age of cocoa trees while young trees need more attention and often weeding.

Three in four children working on the household farm are attending school. Household income determines whether child will go to school or not (Heady, 2000). According to MMYE (2008) schooling is the main activity of children while 35% of them also work on cocoa farm. GSS (2014) claims that 20.1% of children in all kinds of child labour in Ghana are also attending school. Study also point out that prevalence of these children is in rural areas.

According to Canagarajah and Coulombe (1999), parents' education positively effects schooling of children and diminishing of child labour. Educated fathers negatively affect involvement of child into child labour while educated mothers positively influence school attendance of children.

Religion has also impact on schooling and child labour. Children from Christian family are more likely to be attending school and less likely to be working (Canagarajah and Coulombe, 1999).

Heady (2000) found out that work has a negative effect on child's education and learning achievement while reasons could be exhaustion or different (not scholastic) interests. Children who combine school and work are less likely to learn and make homework and they are in general less interested in academic achievement.

2.5 Education system in Ghana

Constitution of the Republic of Ghana from the year 1992 establish that all persons shall have the right to equal educational opportunities and facilities while basic education shall be free, compulsory and available to all. Secondary education shall be available and accessible to all as well as higher education shall be equally accessible.

Free Compulsory Universal Basic Education policy was presented in the Constitution of the Republic of Ghana (Parliament of the Republic of Ghana, 1992). FCUBE policy ensures that children at the age of 6 years have access to fee-free formal education. This policy was implemented in the year 1995 (MMYE, 2008).

Education Act (Act 778) organizes system of education in three progressive levels: basic education, second cycle education and tertiary education. Basic education, which shall be free and compulsory, consists of 2 years of pre-school education, 6 years of primary education and 3 years of junior secondary school (Parliament of the Republic of Ghana, 2008). However, pre-school education (kindergarten) is not obligatory and children are supposed to start schooling at the age of 6 years (UNESCO, 2006) (see Figure 3).

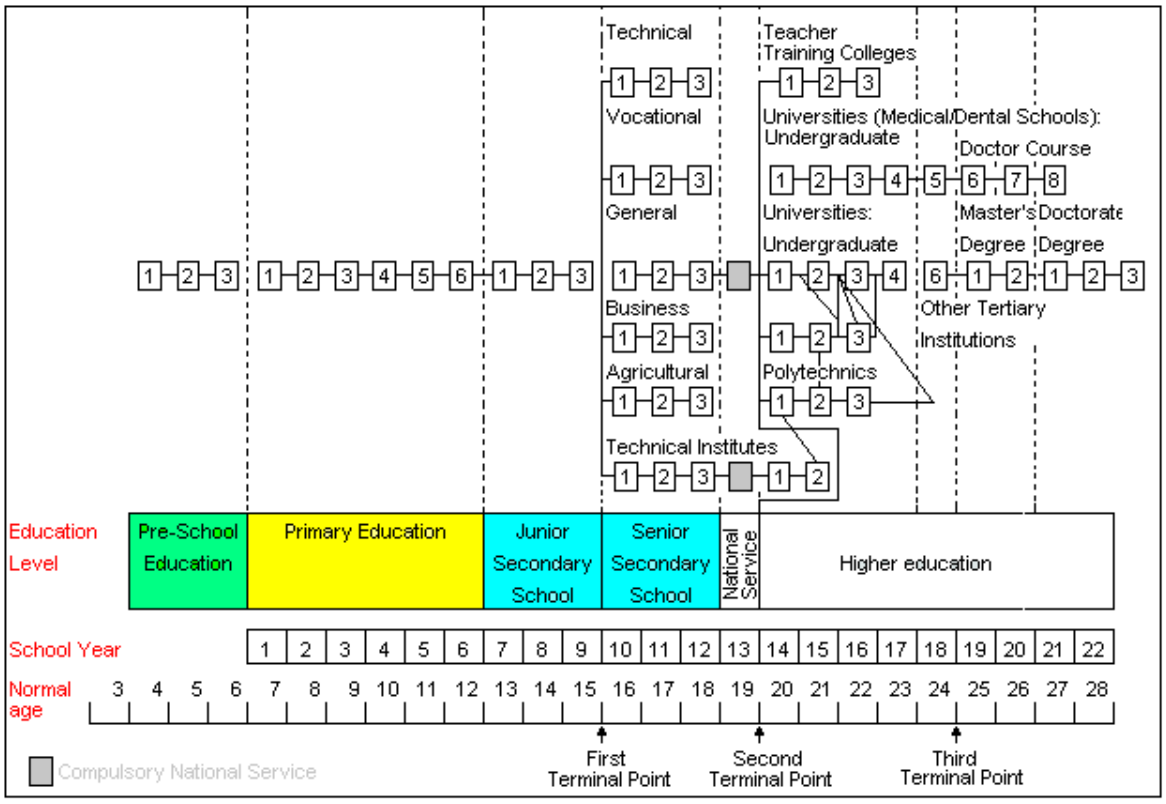

Figure 3: Structure of the Education system in Ghana (UNESCO, 2006)

In the year 2005 Capitation Grant was designed, proposed in Educational Strategic Plan, which focused on quality improvement of basic schools through the effective use of financial resources (CRADA, 2012). After introduction of the Capitation Grant increased school enrollment and number of children attending school (Zdunnek et al., 2008).

2.5.1 Level of education

In developing countries education improves quality of life and pulls people out of poverty (Heady, 2000). Majority of the Ghanaian population (74.1%) aged 11 years and older is literate. Literacy of population at the age of 15 years and older has increased significantly during last years (from 54.1%. in the year 2000 to 71.5% in the year 2010) (GSS, 2012).

Survey conducted by Hainmueller et al. (2011) detected that 33% of household members above 21 years have never attended school while mean number of years of schooling in Ghana was 3 years. School enrollment of all farmers' children aged 5 to 21 years was 80%.

In Ghana many households live below poverty line. Sometimes parents can not afford to pay study fees and materials for their children. Children have to take care about payment for their education (Casely-Hayford, 2004). Even though basic education (including primary and junior secondary education) is formally free, schools charge fees for meals, school activities, uniforms and study materials (Bøås and Huser, 2006).

Primary schools are almost in all villages or in close distance. Accessibility of secondary schools is worse (Hainmueller et al., 2011). Bad infrastructure, inadequate conditions of classrooms (insufficient number of desks, no walls or unpaved floors) and sanitary facilities, lack of libraries and scarcity of teachers has an impact on quality of child's education (CRADA, 2012).

According to MMYE (2008) 54% children, living in cocoa growing communities, can not read and write. As level of education is of lower quality in some schools and after completing the basic education some children are still illiterate, parents send some of their children (usually the smarter ones) to the school and other remain with parents working on the farm (CRADA, 2012).

2.5.2 Absenteeism at school

Cocoa farmers consider education as a way their children can get out from the cocoa production (Berlan, 2004). Headmasters of the schools state that median

absenteeism of enrolled children is 18%. According to the answers of headmasters, children mainly do not attend the school because of the work on household farm (Hainmueller et al., 2011). Poor farmers can not afford to lose free labour especially when education is of lower quality (Casely-Hayford, 2004). Farmers decision whether their child will go to school or not, depends on accessibility of school and quality of education (CRADA, 2012).

As the annual demand for teachers is three times higher than supply (Tuakli et al., 2006), in some areas students were found at school alone without teacher (Casely-Hayford, 2004). Some teachers wanted students to work on their farms instead of schooling. As a reaction on it, farmers took their children from the school and engaged them into work on their own farm (Canagarajah and Coulombe, 1999).

Teachers reported that parents sometimes ask for permission to release their children from the school so they can help them on the farm. To avoid not paying for school fees or quit of schooling at all, teachers prefer to release children (Casely-Hayford, 2004).

Not only parents decide if child will skip school and work on the cocoa farm. Some children prefer work on the farm instead of schooling. Child's motivation for work on the cocoa farm is some extra money they can keep (MMYE, 2007).

Nonetheless, 90% of children indicate their involvement into farming only during weekends and their attendance ratio in school is 71% (MMYE, 2007).

Baah (2010) found out that majority of children (81%) working on cocoa farm, carry out activities which do not interfere with their schooling.

3 Aims of the thesis

Main aim of this thesis was to estimate the contribution of household income, number of farmers' children and farmers' education to the probability of a child's involvement into work on cocoa farm.

Theoretical literature suggested that:

- Increasing household income decreases the probability of child's involvement into work on cocoa farm (Blunch and Verner, 2001; Andvig, 2001; Sitiuk, 2007; Education International, 2013; Berlan, 2013; ILO, 2013).
- Increasing number of farmer's children increases the probability of child's involvement into work on cocoa farm (Owusu and Kwarteye, 2008).
- Increasing education of farmers decreases the probability of child's involvement into work on cocoa farm (Canagarajah and Coulombe, 1999; Ray, 2000; Tzannatos, 2003; Agbefu, 2010; Dwumfour Osei et al., 2014).

Particular aims of the thesis were defined as:

- Analyze the causes of child's involvement into work on cocoa farm
- Determine the activities children carry out on cocoa farm
- Detect how many children are engaged in the farming activities which counteract with permissible works by age (MMYE, 2008)
- Detect how many children are in child labour according to ILO Convention on minimum age for admission to employment (ILO, 1973) and ILO Convention on worst forms of child labour (ILO, 1999)
- Analyze effects of the farming activities on education

4 Methodology

4.1 Studied area

Research was conducted in Sefwi-Wiawso district situated in Western region of Ghana. During the research were visited two villages, Boako and New Adiembra. Before the launch of the research in studied area, all research team had visited local COCOBOD base in town Sefwi Wiawso.

Out of ten Ghanaian administrative regions cocoa grows in six regions (see Figure 4) namely in Western region (56.5%), Ashanti region (15.4%), Brong Ahafo region (9.6%), Eastern region (9.5%), Central region (8.9%) and Volta region (0.1%) (WB, 2011).

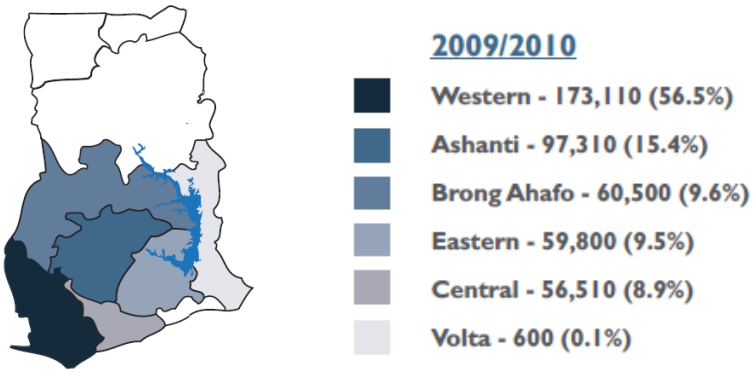

Figure 4: Cocoa production by regions (WB, 2011)

Nowadays Western region contributes to more than half of all Ghanaian cocoa production. Production in Western region has expanded during last 30 years. In the eighties of last century Ashanti region had dominance over cocoa production (35.5%) followed by Brong Ahafo region (18.5%). Western region was that time fourth most cocoa producing region with share 17.5% of all Ghanaian cocoa production (WB, 2011). Cocoa production in Western region has tripled since that time and Western region has now leading position in this agriculture sector.

Western region is characterized with high rainfall and forest zones what makes this area the most suitable for cocoa production (WB, 2011). Abenyega and Gockowski (2001) state that Western region is humid forest area with significant forest resources and the lowest population pressures. In the past farmers who cocoa trees went unproductive found new virgin forest areas for their production. Farmers contributed to the deforestation of the

country and endangerment of the biodiversity. Western region disposed with abundant land resources and so became a new epicentre of cocoa production (WB, 2011).

Western region with area 23,921 km^2 is located at the south of Ghana. Region lies across coast and is surrounded with Brong-Ahafo region, Ashanti region, Central region and Ivory Coast. Capital is Sekondi-Takoradi and region is divided into 22 districts. Western region inhabit 9.6% of all Ghanaian population (2,376,021 people). Majority (57.6%) lives in rural areas. Distribution of population by gender is approximately equal. Major ethnics in Western regions are Akans (1,809,148), Mole-Dagbani (199,044) and Ewe (143,891). Christianity (prevalence of Pentecostal/Charismatic movement) is mostly professed faith followed by Islam. Relatively high number of people is without any religion.

Mean age of the population is 24 years while highest share of population is 5 to 9 years old. Of the population aged 12 to 17 years 6% is already married. Number of literate population aged 11 years and older is 1,272,529 (76.42%) people. From all population of Western region aged 3 years and older 22.44% have never attended school with significant predominance in rural areas (WB, 2011).

Although share of employed children in the age 5 to 14 years old is recognizable smaller (6.25%) comparing to other regions, children in this age suppose to be in full time education. According to Ghana Statistical Service (2014), in Western region are 20.5% of children in the age 5 to 17 years in child labour (See Figure 5).

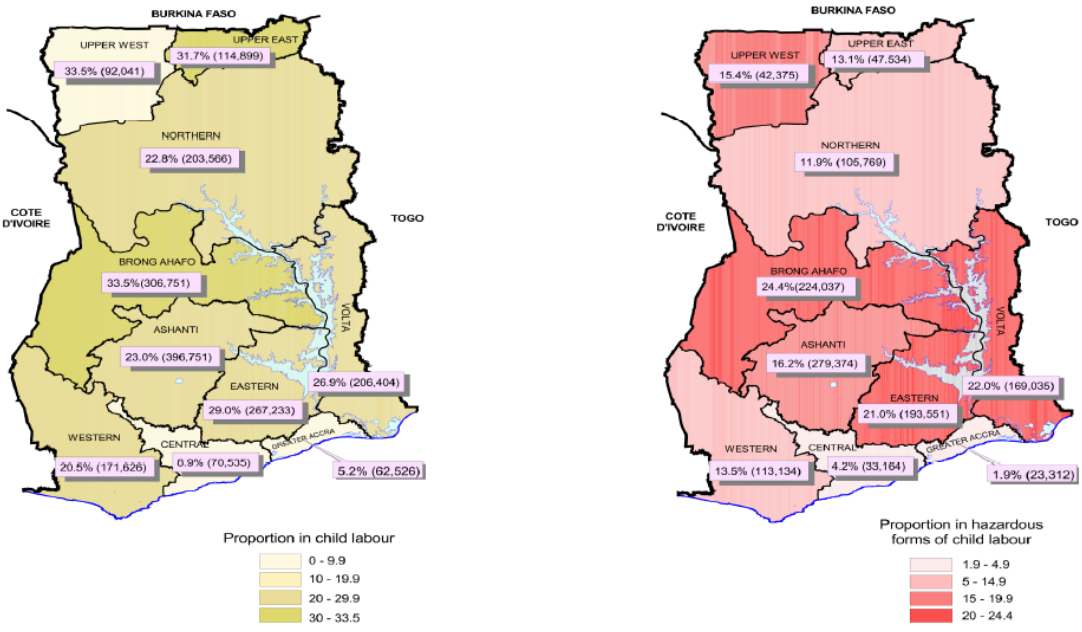

Figure 5: Proportion of children (5 to 17 years) in child labour in Ghana (GSS, 2014)

Sefwi-Wiawso district is situated in the North Eastern part of the Western region. Capital, named equally as district, is Sefwi Wiawso (see Figure 6). With area 1,289 km^2 covers 7% of Western region land. Sefwi-Wiawso lies in tropical rainforest climatic zone with moderate to heavy rainfall. Humidity during day is 75% and during night is 90%. Two long wet seasons alternate with one short dry season (Ministry of Finance, 2014).

Main economic activity of district population is agriculture. This sector employs 80% of working population. Sefwi-Wiawso district is one of the largest producers of cocoa in Western region (Ministry of Finance, 2014).

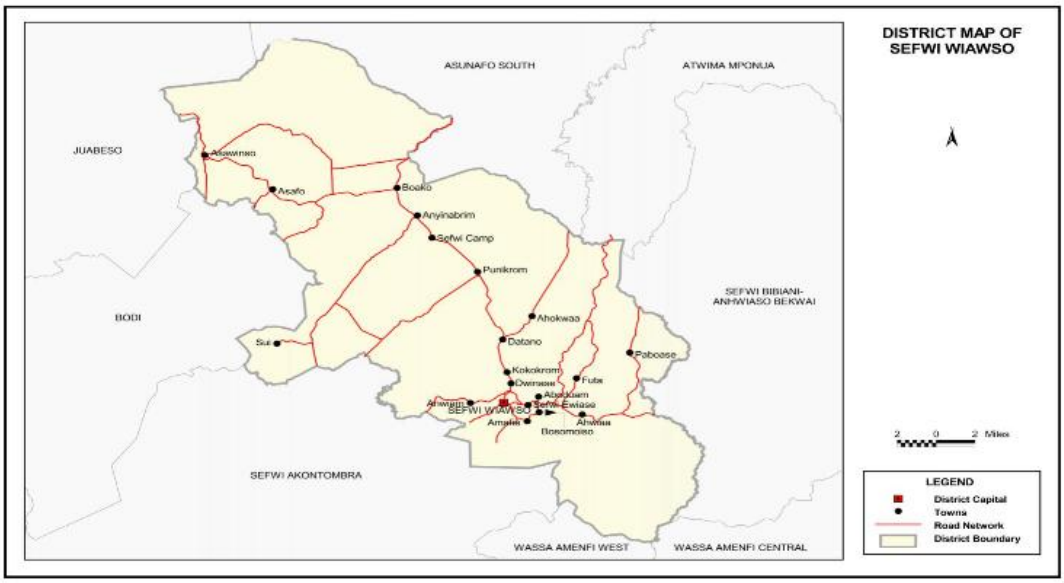

Figure 6: Sefwi Wiawso district (GSS, 2014)

Population of district forms 5.9% (139,200 people) of total Ghanaian population. Prevalence of population (64.2%) lives in rural areas (GSS, 2014). Main ethic group (70%) is Sefwi/Akan. Sefwi ethnic group are indigenous people of the district (Ministry of Finance, 2014). Young population below 15 years creates 41.2%. Child dependency ratio is 74.8[2] (GSS, 2014).

In Sefwi Wiawso district are 119 primary schools (39 private and 80 public) and 76 junior secondary schools (24 private and 52 public). There are also 114 nursery schools and 4 senior secondary schools (Ministry of Finance, 2014).

Of total district population is 71.5% literate and 69.5% speaks English along with Ghanaian language. As predominance of population is younger than 15 years, 40.09% of

[2] For every 100 working-age people (15 to 64 years), there are 75 children dependent on them (GSS, 2014).

total district population currently attends school. Almost half of them (47.2%) attend primary school (GSS, 2014).

Number of children enrolled in school significantly decreases in junior secondary school. Approximately 66.49% of children attending primary school do not continue studying at junior high school (GSS, 2012). Reasons of school non-attendance might be a lack of parental support, care and responsibility as well as lower quality educational system. Children attending last years of primary school and first years of junior high schools are often dropped out of school. Instead of schooling they start to work full time on the farm (Casely-Hayford, 2004)

According to Casely-Hayford (2004) the highest share (19.04%) of child labour in cocoa production is found in Sefwi Wiawso district.

4.2 Timeframe

Total time determined for preparation, pilot testing and data collection in Ghana was three months since 17th June 2014 till 13th September 2014. Theoretical preparation for data collection in Western region of Ghana started in March 2014. Composition of both questionnaires was accomplished in May 2014 and revised in June 2014. The most suitable area for the research was selected in March 2014. Specific villages were chosen in the beginning of July 2014. Pilot testing started at the end of June 2014 and finished first day of the research. Data collection, observations, transects walks and visit of COCOBOD occurred at the end of July 2014.

Interviews with local cocoa farmers and their children were intensives and lasted three days. Time for data collection was selected pursuant to circumstances. As June and July are peak months for weeding, farming activity carried out mainly by children, there was a possibility to find children working on the cocoa farm. This thesis analyzes also education and school attendance of working children. In Ghana public schools have summer holidays since the beginning of July and so personal observations were irrelevant during the research even though many private schools have lessons till the middle of August.

4.3 Research design

Selection of studied area was chosen according to the previous study of Casely-Hayford (2004) which claimed that the highest share of children involved in cocoa production was found in Sefwi-Wiawso district. Research was conducted only with people

engaged in cocoa farming directly as farmers as well as indirectly represented by children of cocoa farmers. Sample size was divided into two groups with higher orientation on respondents below 18 years old.

4.4 Sample size

The sample size was chosen by willing respondents involved in cocoa farming activities who lived in Sefwi-Wiawso district, Western region of Ghana. Total number of respondents was 151 people. Respondents were categorized into two groups.

4.4.1 Children of cocoa farmers

First group consisted of children whose parents were engaged in cocoa farming. Children were considered only persons younger than 18 years (UN, 1989). During the survey 60 children were interviewed. Gender distribution of males (32 respondents) and females (28 respondents) was almost equal.

Majority of children (52 respondents) were below 15 years. According to ILO Convention on minimum age for admission to employment (1973) and Children's Act (1989) these children can not carry out any work but at the age of 13 to 15 years children are allowed to perform light works. Number of children, who were allowed to be engaged in light works, was 10 (see Table 3).

Children below 15 years suppose to be in full time education. Interviewed children achieved mainly primary education (56 respondents) while none of them had ever attended school (see Table 3).

Table 3: Demographic indicators of children of cocoa farmers

	Total	**Male**	**Female**
Gender	60	32	28
Age			
- **below 13 years**	42	18	24
- **13 to 15 years**	10	8	2
- **15 years and above**	8	6	2
Education			
- **pre-school**	4	0	4
- **primary**	56	32	24

4.4.2 Cocoa farmers

Second group of respondents was formed of 91 cocoa farmers with predominance of females (47 respondents). Almost all cocoa farmers had children except one young man.

All age categories were interviewed. Cocoa farmers were mainly between 26 to 55 years old (69 respondents). The highest number of cocoa farmers (37 respondents) was aged 41 to 55 years (see Table 4).

Majority of cocoa farmers accomplished primary education (60 respondents). Only few cocoa farmers achieved secondary education (9 respondents) while one quarter of all cocoa farmers had never attended school (22 respondents) (see Table 4).

Table 4: Demographic indicators of cocoa farmers

	Total	Male	Female
Gender	91	44	47
Age			
- **18 to 25 years**	3	2	1
- **26 to 40 years**	32	18	14
- **41 to 55 years**	37	16	21
- **56 years and above**	19	8	11
Education			
- **without**	22	9	13
- **primary**	60	26	34
- **secondary**	9	9	0

4.5 Data and data sources

During the elaboration of this thesis two types of data were collected and applied - primary data and secondary data.

Primary data were gathered during personal stay in Ghana mainly through interviews with local cocoa farmers and their children. Responses were endorsed by observations and transect walks in studied area. Complementary data were gained from conversations with management of local COCOBOD base.

Secondary data and information sources were as well used to precisely describe current situation and to bring as accurate results as possible by careful reviewing of several articles, reports, documents, reviews and statistical and other databases.

4.6 Data collection methods

During the research several data collection methods were used. Selected data such as structured questionnaires, interviews, observations and transect walks were applied in order to gain accurate and useful information.

4.7 Pilot testing

Questionnaires were firstly revised after consultation with research assistant from Ghana. Some changes were implemented after teaching one month in primary school in Eastern region as a result of deeper understanding of local mentality. Small modification of the questionnaires was realized during the first day of the research. Some questions, mainly hypothetical ones, were modified because of the difficult understanding by local cocoa farmers.

4.8 Structured questionnaire

Structured questionnaires were chosen as the main data collection tool pursuant to the fact that the visit of research team was announced to the local chief. Local chief called all cocoa farmers from the district to conduct interviews. Questionnaires were considered the most effective research tool due to the high number of active respondents, short time available for the research and limited number of translators.

Questionnaires were created for two target groups of respondents. Questions were adjusted in accordance with age. Questionnaires were prepared in English language. Even though official language of Ghana is English, only few adults spoke English. None if children spoke English. Questions and additional discussions were translated by hired translators.

Both questionnaires comprised demographic questions. The way all questions were formulated and interpreted to the respondents was respectful and tactful.

4.8.1 Questionnaire for children of cocoa farmers

Questionnaire for children consisted of 22 questions plus 6 sub questions. Questions were oriented mainly on child’s education and school attendance as well as on

the activity child carry out on cocoa farm. Children were also asked about their future plans and relation to the cocoa farming (see Annex 1).

4.8.2 Questionnaire for cocoa farmers

Questionnaire for adults was more extensive created of 24 questions and 8 sub questions. Cocoa farmers were asked about the number of children they have and child's involvement into cocoa farming. Some questions focused on farmer's cocoa production and their attitude to the farming (see Annex 2).

4.9 Data analyses

Gained data from 151 filled questionnaires (60 questionnaires for children of cocoa farmers and 91 questionnaires for cocoa farmers) were transcribed into Microsoft Office Excel, categorised and subsequently prepared for further analyses. Particular aims were analyzed through figures in MS Excel.

The analysis was conducted with SW Gretl using Logit model for binary data. A cross-sectional data collected among 91 cocoa farmers were applied in this model.

4.9.1 Logistic regression model

Logistic regression is a non-linear model which is used when dependent variable is binary. It means that variable takes values 0 or 1. Logit model estimates the probability of dependent variable to be 1; event happens.

In this thesis a logit model for binary data is used to estimate the contribution of household income, number of farmer's children and farmers' education to probability of a child's involvement into work on cocoa farm.

Child's involvement into work on cocoa farm is not a continuous variable, but discrete. It takes value 0 if child does not work on cocoa farm and value 1 if child works on cocoa farm. Logit model enables to calculate influence of the household income, number of farmer's children and farmers' education on a child's involvement into work on cocoa farm; specifically whether child works on cocoa farm or not.

Logit model:

$$\Pr(Y=1 \mid X1, X2, \ldots X_k) = \frac{1}{1+\left(\frac{1}{e^{(\beta_0+\beta_1 X1+\beta_2 X2+\ldots+\beta_K X_K)}}\right)}$$

Endogenous (dependent) variable:

Y_i… Child's involvement into work on cocoa farm

$$y_i = \begin{cases} 1 & P_i \\ 0 & 1 - P_i \end{cases}$$

1 means child works on cocoa farm

0 means child does not work on cocoa farm

Exogenous (independent) variables:

x_1… Unit vector (constant)

x_2… Household income (average household monthly income in GHS)

x_3… Number of farmer's children (number of children per one farmer)

x_4… Farmers' education (number of years of schooling per one farmer)

5 Results

5.1 Descriptive part - children of cocoa farmers

5.1.1 Demographic and social indicators

Gender

Gender distribution of males and females was almost equal. Number of interviewed boys (53%) was slightly higher comparing to girls (47%) (see Figure 7).

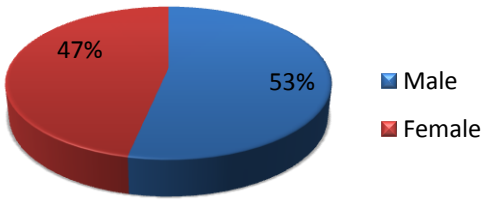

Figure 7: Gender distribution of children

Total share of children engaged in some farming activity was 82%. Male children were more likely to work on cocoa farm than female children (see Table 5).

Table 5: Child's involvement into work on cocoa farm according to the gender

	Total	Male	Female
Child worked on cocoa farm	49 (82%)	28 (46%)	21 (35%)
Child did not work on cocoa farm	11 (18%)	4 (7%)	7 (12%)

Age

The average age of respondents was 11.15 years. The youngest respondent was only 5 years old while the oldest respondents were 17 years old.

Respondents were categorized into 3 groups (see Figure 8) according to the ILO Convention on minimum age for admission to employment (1973), Children's Act (1989) and considering the fact that compulsory education in Ghana finishes at the age of 15 years.

The majority of interviewed children, 70%, were below 13 years. Children below 13 years can not be engaged in any activity on cocoa farm. 17% children were at the age (13 to 15 years) when the work on cocoa farm is limited and child can carry out only light

works. Only 13% respondents were 15 years old and above. Children aged 15 years are supposed to have finished the compulsory education (primary education) and they can be employed. However, child can not carry out hazardous work or work in dangerous circumstances.

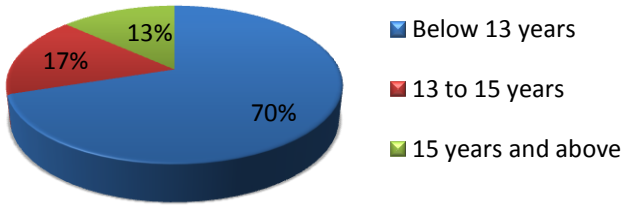

Figure 8: Age distribution of children

Education

High share of interviewed children (93%) currently studied primary cycle or they already had accomplished to study at primary/junior secondary school (see Figure 9).

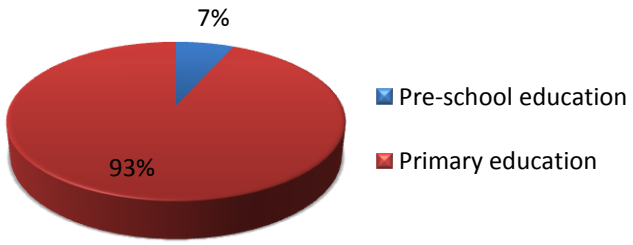

Figure 9: Level of children's education

Primary education cycle consists of primary school and junior secondary school. Primary education is compulsory. Child accomplishes primary education at the age of 15 years. 7% children were above 15 years old and they still did not finish primary education.

Causes of late accomplishment of primary education might differ through families but one observed reason is late enrollment into primary school. Of four children attending kindergarten were three children above the age of 6 years. At the age of 6 years child is supposed to enroll into primary school. Comparing number of year's child attends school and child's age (omitting the fact that child repeated school year) it is found out that 75% children did not enroll into primary school at the age of 6 years (see Table 6).

Table 6: Child's enrollment into primary school according to the years of schooling and child's age

Child enrollment into primary school (If a fact, that child repeated school year, is omitted)	**Number of children** (Share in %)
Child enrolled into primary school at the age of 6 years	15 (25%)
Child did not enroll into primary school at the age of 6 years	45 (75%)

Number of household members

Children's households had on average 8.12 members. In smallest household lived only two persons. 67% children from these households worked on cocoa farm. Child from largest household with twenty-eight members worked on the cocoa farm as well.

Majority of child's households, 58%, had 6 to 10 members. One quarter of children lived in household with 5 and less members. 17% children lived in bigger households with 11 and more members (see Figure 10).

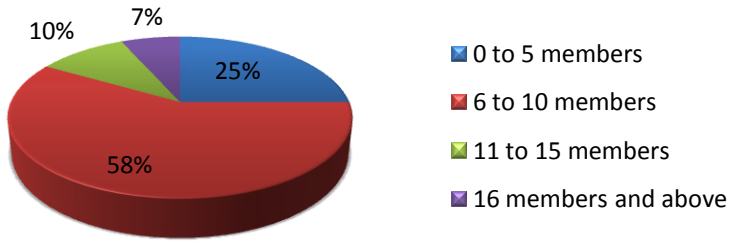

Figure 10: Number of members in child's households

The highest share of working children (59%) lived in household with 6 to 10 members (see Table 7). However children from households with 5 and less members were more often involved in some cocoa farming activity. According to the children from these smaller households, a reason for work on cocoa farm was to help family.

Table 7: Relation between the number of members in child's households and number of working children

Household size	**Number of children according to the household size**	**Number of children working on cocoa farm (Share in %)**
0 to 5 members	15	13 (27%)
6 to 10 members	35	29 (59%)
11 to 15 members	6	4 (8%)
16 members and above	4	3 (6%)

House location

Only 18% children lived in the house located on the farm (see Figure 11).

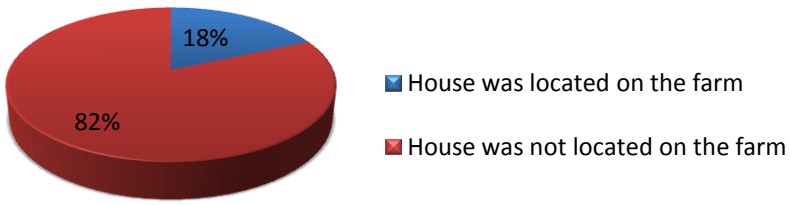

Figure 11: Location of children's houses

Table 8 shows that children who did not live on the farm are more often engaged in some farming activity than children who lived on the farm. Therefore living in house located on the farm does not mean higher child's engagement into farming.

Table 8: Relation between location of child's house and work on cocoa farm

	Child worked on the cocoa farm	**Child did not work on the cocoa farm**
Child lived on the farm	8	3
Child did not live on the farm	41	8

5.1.2 Causes of child's involvement into work on cocoa farm

As all respondents were children of cocoa farmers, they were in close contact with farming routine. Even though not all children were currently helping parents on the farm, all of them had some experience with the cocoa farming. Younger children used to accompany family to the farm and play there, older children used to help parents in the past.

Majority (67%) of children had positive relation to the cocoa farming (see Figure 12). Most often reason of positive relation to the work on cocoa farm was to help family. Obviously, children had positive relation to the farming because of the tight connection with family. Some of them went to the farm in order to be with the family. Family cooked and ate together on the farm. Children perceived farming as a tradition where all family united together.

Other reasons of positive relation to the cocoa farming were money and food for free. Children were aware of main household source of income from cocoa farming. Better financial situation motivated them to build positive relation to the farming and to assist family. Children also could take food (e.g. cassava) for free for family or themselves. One child said: "If you do not go to farm you have nothing to eat." Children were happy when cocoa grew healthy and family could ensure its income.

Fewer respondents (33%) had negative relation to the work on cocoa farm (see Figure 12). According to these children farming is hard work and they do not want to suffer as their parents do. These children preferred to study and be educated.

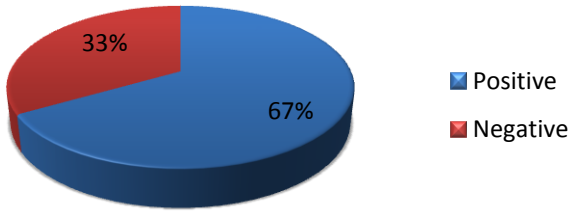

Figure 12: Child's relation to the cocoa farming

Almost half of the children (49%) involved in cocoa farming went to the farm in order to help family members with work. Second most often cause was to prevent diseases of cocoa and damage of harvest (see Figure 13).

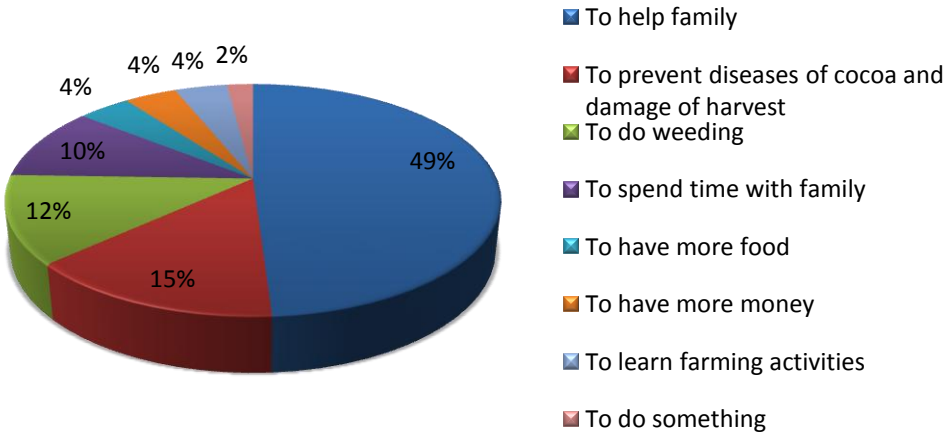

Figure 13: Causes of child's involvement into cocoa farming

Children were in 94% cases not obligated to carry out farming activities. Remaining 6% children were forced to work on cocoa farm by their parents. One boy said that he had to work on cocoa farm so parents could pay his education.

5.1.3 Activities children carry out on cocoa farm

Almost all children (95%) carried out some activity either on the farm or at home. Only 18% respondents did not work on the farm (see Figure 14). These children were occupied with household chores such as fetching water, cooking, laundering and cleaning while family went to the farm. They also picked firewood to ensure additional income or they only accompanied parents to the farm without carry out any work.

Rest of children, 82%, worked on cocoa farm (see Figure 14).

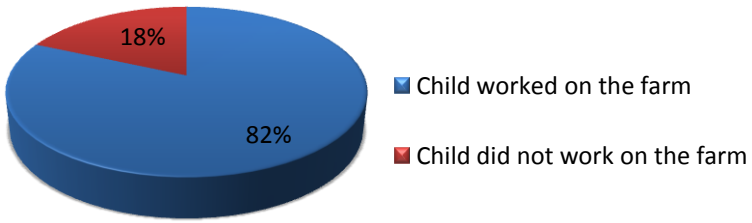

Figure 14: Share of children working on cocoa farm

Weeding was the main farming activity 78% children carried out on cocoa farm followed by picking beans (8%), babysitting of siblings (6%), spraying pesticides (2%), fetching water (2%) and cooking (2%) (see Figure 15).

71% children did not consider the work they did on cocoa farm as hard.

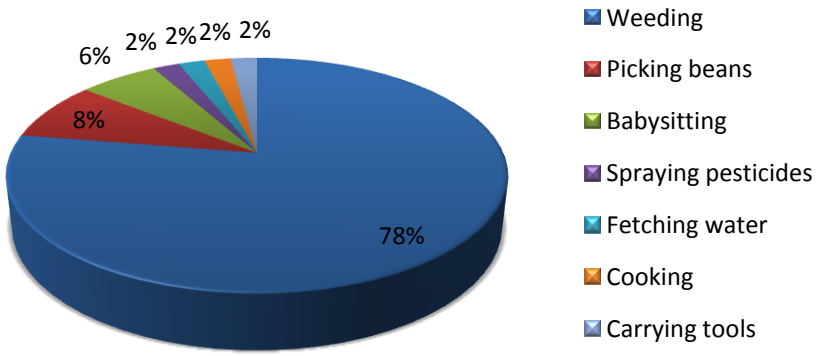

Figure 15: Activities children carried out on cocoa farm

Spraying pesticides was the main farming activity only of one child but another two children claimed to have experience from the past. Number of children which never applied pesticides was high. Of all children involved in farming, 94% children did not have experience with spraying pesticides (see Figure 16).

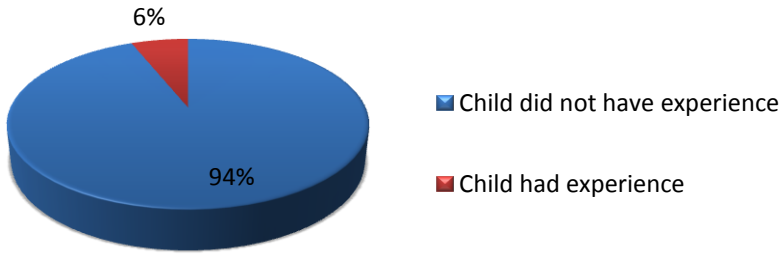

Figure 16: Experience with applying pesticides

Cutlass was the most frequent tool 65% children used to perform their work. Children used cutlass for weeding in 84% cases. Other tools they used for weeding were hoe and their hands. Rubber for fetching water and spraying machines for applying pesticides were used less often. Children engaged in babysitting of siblings did not use any tool (see Figure 17).

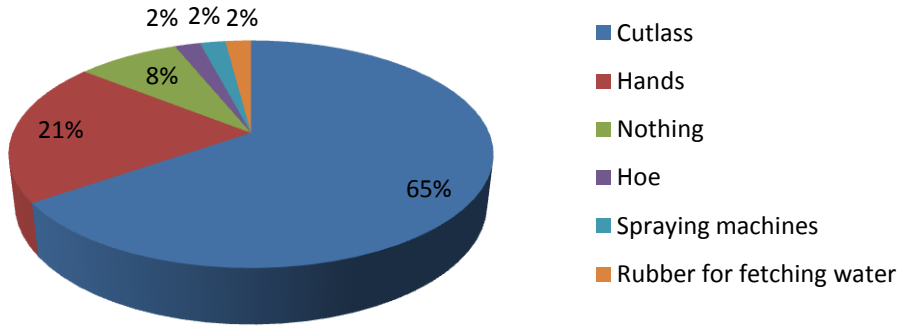

Figure 17: Equipment children used on cocoa farm

5.1.4 Farming activities according to the set of permissible works by age and ILO Conventions

According to the set of permissible tasks and recommendations by MMYE (2008) (see Table 2), children can do weeding with small cutlass when they are 15 years and above. Children below 15 years can do weeding only by hands and minimum age is 8 years. All children, who used cutlass for weeding, claimed to use long cutlass.

74% children engaged in weeding used for work cutlass although at their age they could do only weeding by hands. Two children below 8 years uprooted weed by hands. Child aged 5 to 7 years can only accompany parents to the farm during weekends and holidays without undertaking any task.

Out of all children performing weeding, 89% children counteracted with the set of permissible tasks and recommendations by MMYE (see Table 9). Out of all children engaged in other than weeding activity, 18% children performed impermissible task.

Final share of children carrying out impermissible works by age was 68% (see Figure 18).

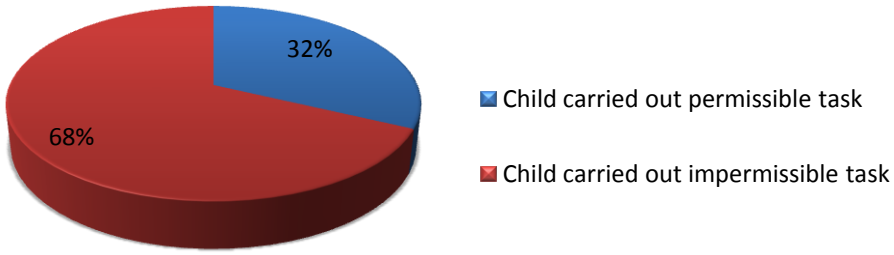

Figure 18: Distribution of children according to the set of permissible tasks by age

Only 4% working children did not counteract with ILO Conventions (see Table 9). Firstly, 67% working children were below 13 years; the age child can not carry out any work. Secondly, 65% working children used long cutlass. Thirdly, one child applied pesticides. Children who used long cutlass and applied pesticides were exposed to the hazardous tasks in dangerous circumstances. Total share of working children in child labour was 96% (see Figure 19).

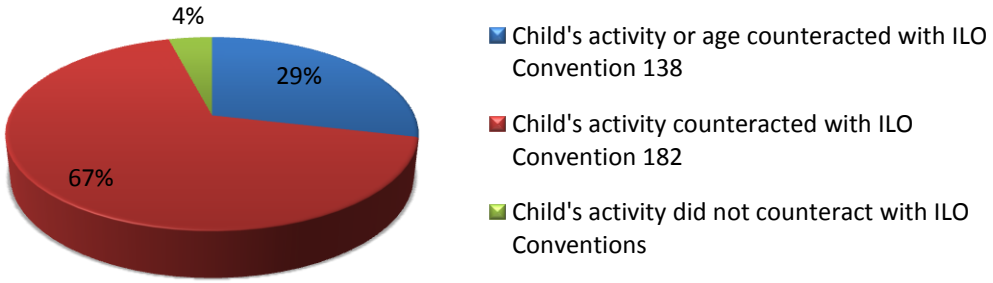

Figure 19: Child's activity according to the ILO Conventions

Table 9: Farming activities according to the set of permissible works by age and ILO Conventions

Activity child carried on cocoa farm (Number of children engaged in activity)	Number of children which counteracted with permissible works by MMYE	Number of children which counteracted with ILO Convention 138	Number of children which counteracted with ILO Convention 182
Weeding (38)	34 (89%)	6 (16%)	32 (84%)
Picking beans (4)	0	3	0
Babysitting (3)	0	3	0
Spraying pesticides (1)	1	0	1
Fetching water (1)	0	0	0
Cooking (1)	0	1	0
Carrying tools (1)	1	1	0

5.1.5 Effects of farming activities on education

Most respondents (87%) were below 15 years. Compulsory education in Ghana is supposed to be accomplished at the age of 15 years.

Almost all respondents (97%) were enrolled in school (see Figure 20).

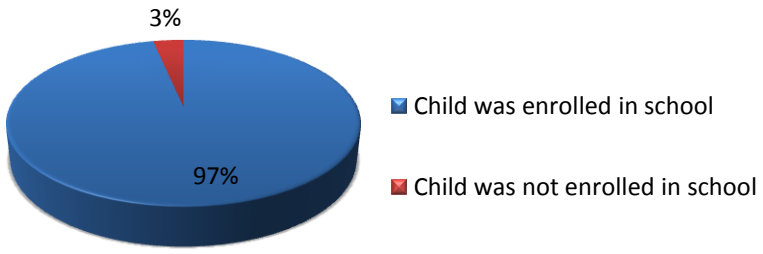

Figure 20: Distribution of children according to the school enrollment

Children had classes in the morning and except one child, all children went to the school regularly. After school 94% children, who also work on cocoa farm, studied at home and they did homework.

Children had positive relation to schooling and they liked to spend time at school. They felt happy at school because of the entertainment they had with classmates. None of the children was tired or unconcentrated at school as a result of work on cocoa farm.

3% children were not enrolled in school (see Figure 20). These children were 15 years old and they already worked. They did not work on cocoa farm.

Interviewed children went to the farm mainly during non-school days. 65% children worked on cocoa farm only on Saturday (see Figure 21). Time, child spent on cocoa farm, was on average 1 to 2 hours.

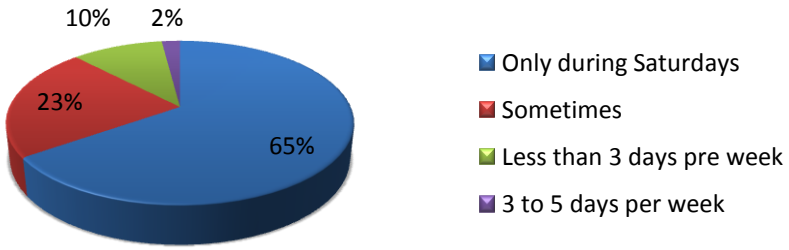

Figure 21: Number of days children worked on cocoa farm

23% children did not work on cocoa farm regularly (see Figure 21). They worked on cocoa farm mainly during weekends, holidays and after school for approximately 2 hours.

Children who worked on cocoa farm for two and more days per week, they also worked for more hours than other children. However these children went to the school regularly except one child.

Children were asked about their future plans and ambitions. Even though, all of them were raised in farming family only 5% children would like to become a farmer in the future (see Figure 22).

Remaining 95% children named professions which in majority required higher education. Most often listed professions were a doctor, banker or nurse.

Figure 22: Child's relation to the cocoa farming in the future

5.2 Descriptive part - cocoa farmers

5.2.1 Demographic, social and economic indicators

Gender

Distribution of adult cocoa farmers was also almost the same but number of females was slightly higher (52%) than males (48%) (see Figure 23).

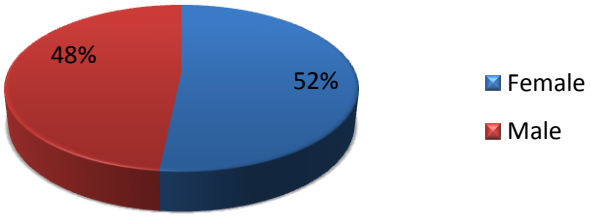

Figure 23: Gender distribution of farmers

Out of all cocoa farmers, 26% engaged children into farming activities. These children were more often of female farmers. Male farmers were less likely involving their children into cocoa farming activities (see Table 10).

Table 10: Involvement of farmer's children into work on cocoa farm according to the gender of farmers

	Total	Male	Female
Farmer's child worked on cocoa farm	23(26%)	9 (10%)	14 (15%)
Farmer's child did not work on cocoa farm	67 (74%)	35 (39%)	33 (36%)

Age

Average age of farmers was 44.54 years. Farmers were divided into 4 groups. Farmers old 18 to 25 years represented only 3%. 35% farmers were aged 26 to 40 years. Middle-aged farmers (41 to 55 years) created 41% of all farmers. Older farmers (aged 56 years and above) represented 21% of all farmers (see Figure 24).

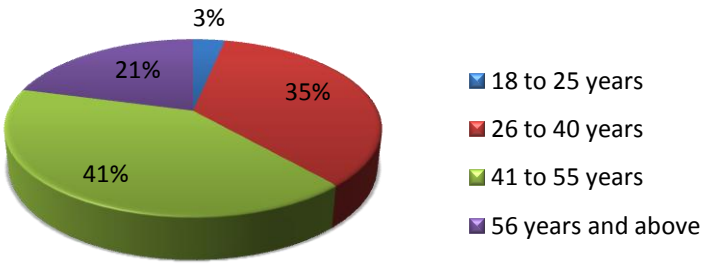

Figure 24: Age distribution of farmers

Table 11 shows that farmers aged 41 to 55 years were more likely involving their children into cocoa farming activities (see Table 11).

Table 11: Child's involvement into work on cocoa farm according to the farmer's age

Age of cocoa farmers divided into groups	Number of farmers whose engaged child into work on cocoa farm
18 to 25 years	0 (0%)
26 to 40 years	5 (22%)
41 to 55 years	12 (52%)
56 years and above	6 (26%)

Education

Farmer's highest achieved education was secondary. Secondary cycle starts at the age of 15 years and lasts 3 or 4 years dependently on study program. Mean years of schooling of 10% farmers, which studied also secondary education, was 12.77 years.

Primary and secondary education last together 12 or 13 years dependently on study program in the second cycle. However some farmers studied primary and secondary education less than 12 years. Most farmers (66%) finished only primary education. Primary education lasts for 9 years. Farmers studied primary education on average 7.62 years. Almost half of them (47%) studied less than 9 years while only 15% farmers studied exactly for 9 years.

Cocoa farmers without any education were mainly from the third age group (41 to 55 years) with share 24% (see Figure 25).

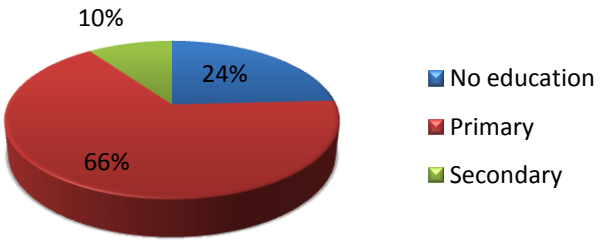

Figure 25: Level of farmers' education

Profession

All farmers had the main profession farming. 3% farmers dedicated also to trade. Mean number of years, respondents worked as farmers, was 14.52 years. Almost all farmers (97%) were raised on the farm (see Figure 26).

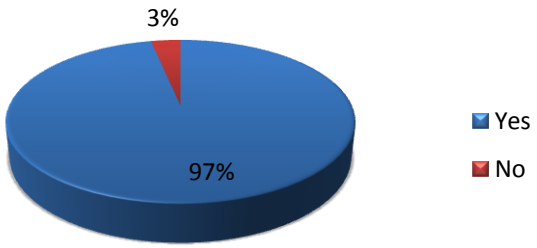

Figure 26: Farmer was raised on the farm

Even though almost all farmers were raised on the farm and they spent their whole life on the farm, not all of them wanted to be a farmer by profession. Of 19% farmers, which did not want to be a farmer, were 12% still studying to succeed their dream job and another 12% already succeed it. Some professions farmers wanted to do instead of farming demanded higher education that none of farmers achieved. Majority of farmers, 81%, always wanted to become a farmer (see Figure 27).

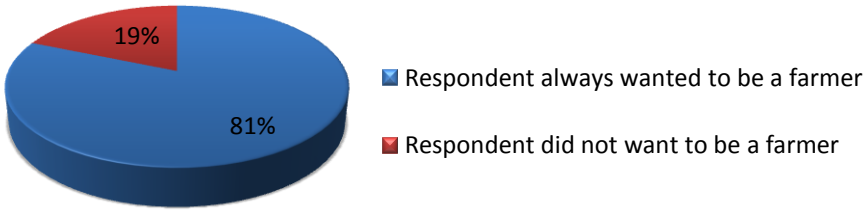

Figure 27: Farming as a life choice

Number of household members

Average household size was 7.53 members per household. Households with size 6 to 10 members were found in 63% cases. 27% farmers lived in households with 5 and less members. Larger households (11 members and above) were found in 10% cases (see Figure 28).

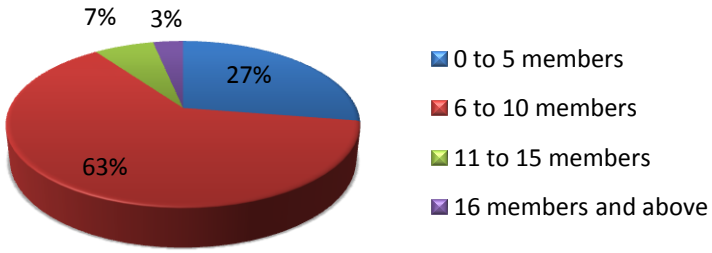

Figure 28: Number of members in farmer's households

Table 12 shows that farmers whose children worked on cocoa farm were mainly from households with 6 to 10 members.

Table 12: Child's involvement into cocoa farming according to the number of members in farmer's household

Household size	Number of farmers whose children worked on cocoa farm
0 to 5 members	3 (13%)
6 to 10 members	17 (74%)
11 to 15 members	2 (9%)
16 members and above	1 (4%)

Average monthly household income

Average monthly household income of farmers was 367.87 GHS (= approx. 114.04 USD) including also off-farm income.

67% farmer's households lived monthly with 300 GHS and less while 10% farmers claimed to have average monthly household income 901 GHS and above (see Figure 29).

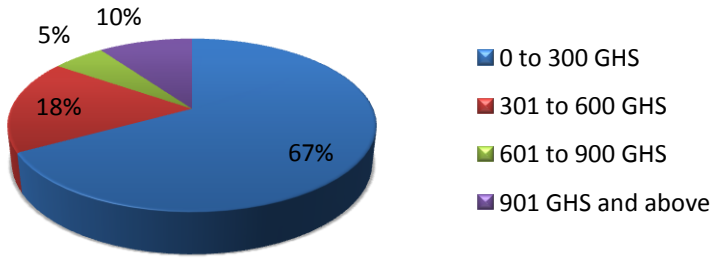

Figure 29: Average monthly household income of farmers

Farmers, whose children worked on the farm, had on average 416.13 GHS per month. Their average monthly household income was higher than average monthly household income of farmers whose children did not work on cocoa farm (351.54 GHS).

Even though 61% farmers, whose children worked on the farm, had average monthly household income 300 GHS and less (see Figure 30).

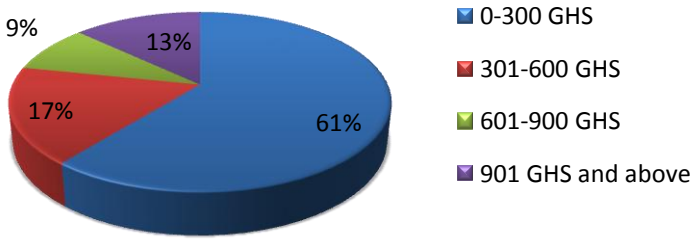

Figure 30: Average monthly household income of farmers, whose children worked on cocoa farm

House location

Only 22% farmers had their house located on the farm (see Figure 31).

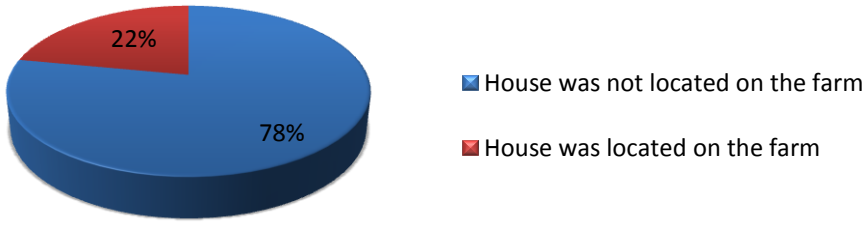

Figure 31: Location of farmer's house

Of the farmers whose children worked on the farm, 74% lived in house not located on the farm. Children working on the farm in few cases lived in house located on the farm (see Table 13).

Table 13: Relation between location of farmer's house and child's involvement into work on cocoa farm

	Farmer's child work on the cocoa farm	Farmer's child do not work on the cocoa farm
Farmer live on the farm	6	14
Farmer do not live on the farm	17	54

5.2.2 Causes of child's involvement into work and activities children carry out on cocoa farm

Almost all farmers had children except one young man. Farmers had on average 5 children while the highest number of children was 13.

Of all farmers with children, 36% farmers involved children into farming activities. Though some older farmers had already adult children and so share of farmers, whose children were below 18 years and worked on the farm, was 26% (see Figure 32).

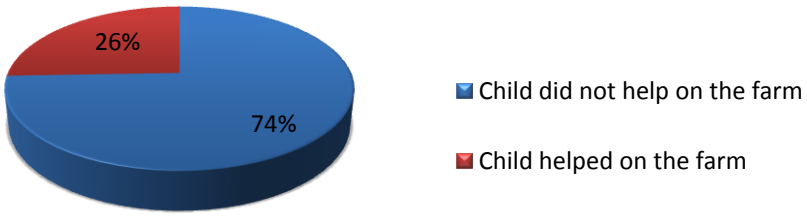

Figure 32: Involvement of farmers' children into cocoa faming activities

Frequently repeated cause of child inclusion into work on the farm was to help family. Another repeated cause was to keep children busy; engage them during weekend because of too much free time. Farmers also said that their children worked on the farm to learn farming activities. Farmers believed that experience from the farm will help child with finding of better job in the future.

Children helped mostly on the farms where worked low number of farmers. Mean number of people working on these farms was 3.3.

Children did mainly weeding. They also picked pods, cooked for family, made planting, carried water and brought food. Some farmers brought their children to the farm in order to teach them farming activities and to observe parents working. Few children (30%) did also drying of cocoa beans.

Only 9% farmers confessed that their children used also dangerous tools or they applied pesticides. None of the farmers would hire a child to work full time on cocoa farm (see Table 14).

Table 14: Involvement of farmers' children into cocoa faming activities

	YES	NO
Farmer engaged child into work on cocoa farm (in total 90 farmers had children)	23 (26%)	67 (74%)
Farmer's child applied pesticides or used dangerous tools (out of 23 farmers whose children worked on cocoa farm)	2 (9%)	21 (91%)
Farmer would hire a child to work full time on cocoa farm (out of all 91 interviewed farmers)	0 (0%)	91 (100%)

5.2.3 Effects of farming activities on education

Children worked on the farm while majority of them (96%) also went to the school regularly (see Figure 33). Only children of one farmer did not attend school.

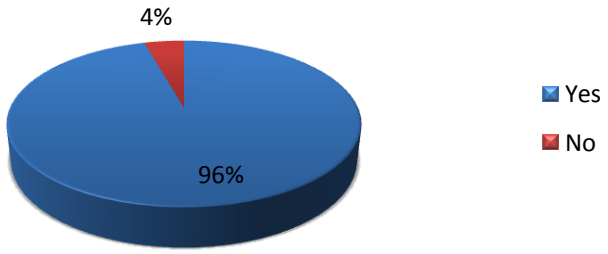

Figure 33: School attendance of farmer's children

2% farmers knew some children which worked on cocoa farm during the school day. They claimed that these children ordinarily did not go to school because of the farming.

97% farmers believed that going to the school is more relevant for child's future than work on cocoa farm. Only 10% respondents thought that work on the cocoa farm (even few hours per week) would not influence child's results at school. One interviewed farmer, which also went to school, stated that he worked only during weekends so he had enough time for studying.

According to the farmers' answers, farming activity of children did not interfere with school days in 87% cases when farmers took their children to the farm during weekends or holidays. Remaining 13% farmers involved children into work depending on the season or sometimes when it was necessary (see Figure 34). Farmers engaged children into work on cocoa farm on average for 3 to 4 hours.

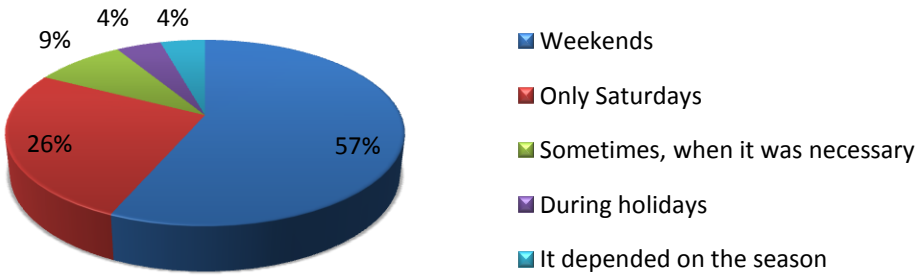

Figure 34: Number of days farmer's involved children into cocoa farming

Only 7% farmers wanted their children to become a farmer in the future (see Figure 35). Other farmers named professions different from cocoa farming. Professions such as doctor, teacher or officer were the most listed by farmers.

Farmers repeatedly mentioned the importance of education. One farmer said: "Education is a key to development." Farmers complained about the difficulty of farming life. 93% farmers wanted their children to become educated and find a better job (see Figure 35).

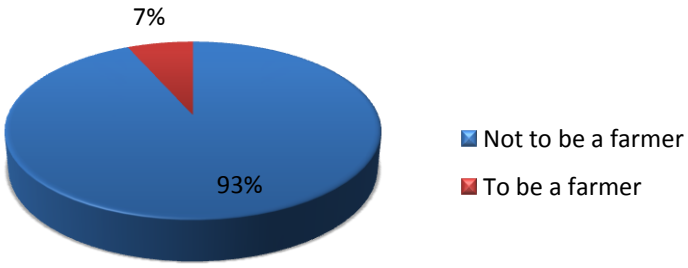

Figure 35: Farmers' opinion on their child's future in farming

5.3 Analytical part

Main aim of this thesis was to estimate the contribution of household income, number of farmers' children and farmers' education to probability of a child's involvement into work on cocoa farm. For the calculation of the probability was used non-linear logit model for binary data. Several features of model's results obtained from SW Gretl are mentioned in this part of the thesis.

Firstly, the accuracy level of used empirical model was defined. Accuracy level explains how close a measured value is to the actual (true) value. Subsequently the sings of coefficients obtained after estimation of logit model are described. The sign of coefficient indicate whether exogenous variable has a positive or negative effect on the endogenous variable. The statistical significance determines which exogenous variables are important and whether their impact on endogenous variable is real. The last analyzed feature is the slope of independent variables; the changing probability of dependent variable when each individual variable increase by 1 unit while holding all other variables at their means. It means how contribute household income, number of farmer's children and farmers' education to probability of a child's involvement into work on cocoa farm. Table with data and outputs from SW Gretl are presented in the annexes (Annex 3: Data table for parameter's estimation in SW Gretl; Annex 4: Outputs from SW Gretl using non-linear logit model for binary data).

The accuracy level of empirical model was relatively high, 72.5%. It means that the model predicted the outcomes correctly 72.5% of cases.

Even though it was assumed that increasing household income would decrease the probability of child's involvement into work on cocoa farm, the model results suggest that the opposite is true. Household income had positive effect on the child's involvement into work on cocoa farm. It means that if average monthly household income increases the probability that the child would be involved in the working activity on cocoa farm also increases.

The assumption, defining that increasing number of farmer's children increases the probability of child's involvement into work on cocoa farm, was confirmed. This independent variable had a positive effect on dependent variable, namely if farmer would have another child the probability, that this child would be engaged in some cocoa farming activity, would increase as well.

Assuming that probability of child's engagement into work on cocoa farm would decrease if farmer (parent) spent more years attending school, was denied by the logit model. Farmers' education had a positive effect on dependent variable. The probability of child's involvement into work on cocoa farm increase with every extra year farmer attends the school. However, according to the model, both the effect of increasing household income and farmers' education are statistically insignificant.

Actually, the model outputs showed that just one of all three independent variables was statistically significant. Only the number of farmer's children had a real impact on child's involvement into work on cocoa farm.

Average household monthly income had a slope equal to 0.000117348. It means that if household income increases by 1 GHS per month from the mean then the probability that child will work on cocoa farm increases by 0.0117348%. Number of farmer's children had a slope equal to 0.0517958. Hence if number of farmer's children increase by 1 child from the mean then the probability of child's involvement into work on cocoa farm increases by 5.17958%. The last exogenous variable, farmers' education, had a slope equal to 0.00831678. Therefore the probability, that child will be engaged in some cocoa farming activity, increases by 0.831678% if number of years, farmer spent at school, increase by 1 year from the mean.

The highest contribution to the probability, that child will be involved into some work on cocoa farm, had a number of farmer's children. Number of farmer's children was also the only independent variable which had a real impact on child's involvement into work on cocoa farm.

6 Discussion

Findings of this thesis show that the total share of children engaged in some farming activity was 82% while male children were more likely to work on cocoa farm than female children. Even though, according to Betcherman (2003) and Blunch and Verner (2011), girls are more likely to work than boys. Betcherman (2003) also pointed out that female involvement into household chores is 50% higher than male involvement. The findings of IPEC (2005) are more in line with the conclusion of this thesis. They state that 60% of child labourers in the West-African countries concerned in cocoa growing are boys.

Older farmers aged 41 to 55 years most likely involved their children into cocoa farming activities. Owusu and Kwarteye (2008) stated that age of farmer has a positive significant influence on probability that child will work on cocoa farm. Therefore with increasing age of farmers increase also the probability of child's involvement into work on cocoa farm.

According to Bayer (2014) causes of child's work on cocoa farm were mainly transfer of skills from farmers to children, babysitting of siblings and financial issues. Empirical results of this thesis define family help as the main cause of engagement into work. Improvement of economic situation and learning farming activities were less likely mentioned by both groups of respondents (cocoa farmers and their children).

Some farmers brought their children to the farm to engage them during weekends and free time. Several resources (Grootaert and Kanbur, 1995; Berlan, 2004; MMYE, 2007; Bayer, 2014) connect child labour with process of child's socialization. Family reasons such as spending time with the family and assisting parents were frequently mentioned in this thesis.

Owusu and Kwarteye (2008) which conducted research in Bibiani-Anhwiaso-Bekwai district of Western Region of Ghana found out that the highest share of children (23%) are involved in scooping. Findings from this thesis were gathered from Sefwi-Wiawso district, which lies next to Bibiani-Anhwiaso-Bekwai district. Nevertheless the activity children carried out in 78%, was weeding. However, empirical results of this thesis and results of Owusu and Kwarteye (2008) agreed on low children participation in application of fertilizers.

All children below 15 years were enrolled in school. According to Orazem and Gunnarsson (2003) school enrollment of working children does not differ dramatically

comparing to children which do not work. They also state that the relation between child labour and school attendance is less known because of the difficulty to elicit information on school attendance from household surveys.

Several studies (e.g. Ravallion and Wodon, 2000; Heady, 2000) declare that work has a negative impact on child's education and learning achievement and confirm that child labour and schooling are not mutually exclusive. Ray and Lancaster (2004) stated that work even in limited amounts, adversely affect child's learning and school attendance. They also state that child labour has an impact on child's ability to read and write and work hours significantly increase the rate of failures. Nevertheless, findings of this thesis show that children went to school regularly and they did not claim any psychical consequences of work while being at school. Learning achievement is not analyzed in this thesis.

According to Heady (2000) children who work are less likely to study at home and do homework. Empirical results show that 94% of working children devoted to study at home after school and they did homework.

Children worked on the farm mainly during non-school days. Work on cocoa farm in 88% cases did not interfere with school days. Also Baah (2010) found out that 81% working children are engaged in cocoa farming activities which do not interfere with schooling.

Farmers (97%) believed that going to school is more relevant for child's future than work on cocoa farm and 93% farmers preferred children to study rather than become farmer. Nonetheless, IPEC (2007) mentions that some parents in Ghana consider child's work to be an apprenticeship for their role as future farmers.

87% farmers took their children to the farm during weekends or holidays. Also According to MMYE (2008) children accompany parents in main on weekends and during holidays.

Many studies (e.g. Ray and Lancaster, 2004; Sitiuk, 2007; Owusu and Kwarteye, 2008; Dwumfour Osei et al., 2014) used discrete choice model such as logistic regression model to estimate probability of a child's involvement into work. Logit model was equally used in this thesis.

Several studies (Heady, 2000; Blunch and Verner, 2001; Sitiuk, 2007; Education International, 2013; Dwumfour Osei et al., 2014) related reducing of child labour with improvement of farmer's wealth.

Betcherman et al. (2004) pointed out declining relation between child labour and poverty. Dwumfour Osei et al. (2014) investigated the relationship between rural household poverty and farmers' choice of child labour in the cocoa sector in Sefwi-Wiawso district. The study shows that household wealth was the most significant indicator and improvement in farmer's wealth decreases child labour in the agrarian communities. However, empirical results of this thesis show that the average monthly household income of farmers, whose children helped on the farm was higher (416.13 GHS) than average monthly household income of all farmers whose children did not work (351.54 GHS). Average monthly household income was statistically insignificant indicator.

Even though previous studies pointed out (Canagarajah and Coulombe, 1999; Canagarajah and Nielsen, 1999; Ray, 2000; Tzannatos, 2003 Dwumfour Osei et al., 2014) that increasing level of parents' education negatively influence involvement of children into work, empirical results of this thesis show that this indicator was statistically insignificant.

This thesis point out that number of farmer's children was the only independent variable which had a real positive impact on child's involvement into work on cocoa farm. Study of Owusu and Kwarteye (2008) equally confirms the positive significant influence.

It was found out in this thesis that household income of farmers' family did not effect involvement of child into work on cocoa farm. Often mentioned cause of child's involvement into work on cocoa farm was to help parents with work and spend time with family. Children in 94% cases went to the farm by their own will. Therefore it is recommened to focus further studies on socio-cultural context of child labour instead of household poverty.

Even though school attendance of children was not influenced by work on cocoa farm, it does not mean that it did not effect learning achievement of child. It is also recommened to concentrate further studies on analysis of school results instead of school attendance.

7 Conclusion

This thesis analyzed if factors such as of household income of farmers' family, number of farmers' children and farmers' level of education have an impact on child's involvement into work on cocoa farm.

It was determined that the number of farmer's children had the highest contribution to the probability, that child will be involved into some work on cocoa farm. Number of farmer's children was also the only factor which had a real impact on child's involvement into work on cocoa farm. The probability, that child would work on cocoa farm increases around 5% if a number of farmer's children increase by 1 child from the mean.

Household income and farmers' education did not have a real impact on child's engagement into cocoa farming activities.

High share of interviewed children of cocoa farmers, 82%, was engaged in some work on cocoa farm. Main cause of child's involvement into work on cocoa farm was to help family with work. Majority of children did weeding. Out of all children working on cocoa farm, 68% children carried out impermissible activity by age according to the regulations of Ministry of Manpower, Youth and Employment (2008). Total share of working children in child labour was 96% according to the ILO Convention 138 (ILO, 1973) and ILO Convention 182 (ILO, 1999).

Findings of this thesis show that work on cocoa farm had a low effect on school attendance of child. All working children were enrolled in school and majority claimed to go there regularly. Furthermore, 88% children worked on cocoa farm only during non-school days for less than 2 hours. 94% working children claimed to study also at home and they also claimed to do homework. According to the fact that school results of children were not identified in this thesis, effect on learning achievement was unknown.

This thesis concludes that household income of farmers' families might not be accountable for child labour in the case of cocoa growing communities in Western region of Ghana. Therefore, child labour on cocoa farms in those areas does not seem to be an issue of household poverty. Even though working children in 67% cases carried out hazardous tasks, they liked to work on cocoa farm and in 94% cases children worked on cocoa farm by their own will.

This thesis only analyzed several causes of child labour without giving any solution to certain issue. Ascertained findings of this thesis might be useful for further analysis.

8 References

Abenyega O, Gockowski J. 2001. Labor practices in the cocoa sector of Ghana with a special focus on the role of children: Findings from a 2001 survey of cocoa producing households. Kumasi: Institute of Renewable Natural Resources, 34p.

Agbefu R. 2010. Upholding the rights of children in developing countries: the case of child labourers in Ghana [MSc]. Oslo: University of Oslo, 84p.

Amoo PK. 2008. Hazardous child labour activity framework for the cocoa sector in Ghana. Accra: Ministry of manpower, youth and employment, 49p.

Andvig JCH. 2001. Family-controlled child labor in Sub-Saharan Africa: a survey of research. Washington, D.C.: World Bank Publications, 68p.

Anim-Kwapong GJ, Frimpong EB. 2004. Vulnerability of agriculture to climate change - impact of climate change on cocoa production. New Tafo Akim: Cocoa Research Institute of Ghana, 34p.

Asante-Poku A, Angelucci F. 2013. Analysis of incentives and disincentives for cocoa in Ghana. Rome: FAO, 38p.

Baah F. 2010. Use of children and the issue of child labour in Ghanaian cocoa farm activities. In: Journal of agricultural extension and rural development vol.2 (9): 198-204

Bayer CHN. 2014. The effects of child labor monitoring on knowledge, attitude and practices in cocoa growing communities of Ghana [PhD.]. New Orleans: Tulane University. Payson center for international development, 213p.

Berlan A. 2004. Child labour, education and child rights among cocoa producers in Ghana. In: van den Aner CH editor. The Political Economy of New Slavery. Hampshire: Palgrave Macmillan, p158-178

Berlan A. 2013. Social Sustainability in Agriculture: An Anthropological Perspective on Child Labour in Cocoa Production in Ghana. In: The Journal of Development Studies vol.49 (8): 1088-1100

Betcherman G, Fares J, Luinstra A, Prouty R. 2004. Child labor, education, and children's rights. Washington, D.C.: World Bank Publications, 32p.

Blunch NH, Verner D. 2001. Revisiting the link between poverty and child labor: The Ghanaian experience. Aarhus: Centre for Labour Market and Social Research, 21p.

Bøås M, Huser A. 2006. Child labour on cocoa production in West Africa: The case of Côte d'Ivoire and Ghana. Oslo: Fafo, 58p.

Breisinger C, Diao CX, Kolavalli S, Thurlow J. 2008. The role of cocoa in Ghana's future development. Washington: International food policy research institute, 24p.

Canagarajah S, Coulombe H. 1999. Child labour and schooling in Ghana. Washington, D.C.: World Bank Publications, 37p.

Canagarajah S, Nielsen HS. 1999. Child Labor and Schooling in Africa: A Comparative Study. Washington, D.C.: World Bank Publications, 30p.

Casely-Hayford L. 2004. Situational analysis of child labour in the cocoa sector of Ghana. Accra: The International cocoa initiative, 71p.

Child research for action and development agency. 2012. Baseline survey analytical report 2012. Kumasi: CRADA group, 35p.

Dwumfour Osei CH, Tawiah R, Osei-Boadi Y. 2014. Analysis of rural household poverty and farmers' decision on child labour nexus using multinomial logit model. In: American Journal of Mathematics and Statistics 4(6): 248-253

Edmonds EV, Pavcnik N. 2004. Child labor in the global economy. New Hampshire: Dartmouth College, 33p.

Education International. 2013. Child labour and education for all: "A resource guide for trade unions and a call against child labour and for education for all". Brussels: Education International, 83p.

Ghana Cocoa Board. 2015. Cocoa. Available at www.cocobod.gh: Accessed 2015-02-06.

Ghana Cocoa Board. 2015. Our corporate social responsibility. Available at www.cocobod.gh: Accessed 2015-02-06.

Ghana Statistical Service. 2012. 2010 Population and housing census. Accra: Ghana Statistical Service, 103p.

Ghana Statistical Service. 2012. Enrolment in primary school & junior high school by region and sex, 2007 - 2010. Accra: Ghana Statistical Service, 2p.

Ghana Statistical Service. 2014. 2010 Population and housing census: Sefwi Wiawso municipal. Accra: Ghana Statistical Service, 75p.

Ghana Statistical Service. 2014. Ghana living standards survey round 6: Child labour report. Accra: Ghana Statistical Service, 64p.

Ghana Statistical Service. 2014. Ghana living standards survey round 6: Labour force report. Accra: Ghana Statistical Service, 75p.

Ghana web. 2015. The Country Ghana. Available at www.ghanaweb.com: Accessed 2015-02-09.

Grootaeart CH. Kanbur R. 1995. Child labor: A Review. Washington, D.C.: World Bank Publications, 48p.

Hainmueller J, Hiscox MJ, Tampe M. 2011. Sustainable development for cocoa farmers in Ghana. Cambridge: MIT and Harvard University, 59p.

Heady CH. 2000. What is the effect of child labour on learning achievement? Evidence from Ghana. Florence: UNICEF, 39p.

International Labour Organization. 1973. C138 - Minimum Age Convention, 1973 (No. 138). Available at www.ilo.org: Accessed 2015-04-12.

International Labour Organization. 1999. Convention 182. Available at www.ilo.org: Accessed 2015-04-12.

International Labour Organization. 2010. Facts on child labour. Geneva: ILO, 2p.

International Labour Organization. 2015. Child labour. Available at www.ilo.org: Accessed 2015-02-01.

International Labour Organization. 2010. Child labour in Africa. Geneva: ILO, 2p

International Programme on the Elimination of Child Labour. 2005. Combating child labour in cocoa growing. Geneva: ILO, 5p.

International Programme on the Elimination of Child Labour. 2007. Rooting out child labour from cocoa farms: Paper No.4 Child labour monitoring – A partnership of communities and government. Geneva: ILO, 121p.

International Programme on the Elimination of Child Labour. 2013. Marking progress against child labour: Global estimates and trends 2000-2012. Geneva: ILO, 48p.

International Programme on the Elimination of Child Labour. 2013. World Report on Child Labour: Economic vulnerability, social protection and fight against a child labour. Geneva: ILO, 78p

Kolavalli S, Vigneri M. 2011. Cocoa in Ghana: Shaping the success of an economy. In: Chuhan-Pole P, Angwafo Mm editors. Yes Africa can: Success stories from a dynamic continent. Washington, D.C.: World Bank Publications, p201-217

Krauss A. 2013. Understanding child labor in Ghana beyond poverty: The Structure of the economy, social norms, and no returns to rural basic education. Washington, D.C.: World Bank Publications, 22p.

Ministry of Employment and Social Welfare. 2009. National Plan of Action (NPA) for the elimination of the worst forms of child labour in Ghana (2009 – 2015). Accra: Ministry of Employment and Social Welfare, 62p.

Ministry of Finance. 2014. The Composite budget of the Sefwi Wiawso district assembly for the 2014. Accra: Ministry of Finance, 68p.

Ministry of Manpower, Youth and Employment. 2007. Labour practices in cocoa production in Ghana. Accra: Ministry of Manpower, Youth and Employment, 120p.

Ministry of Manpower, Youth and Employment. 2008. Cocoa labour survey in Ghana 2007-2008. Accra: Ministry of Manpower, Youth and Employment, 267p.

National legislative bodies/National authorities. 1998. Ghana: Act No. 560 of 1998, Children's Act. 44p

Orazem PF, Gunnarsson V. 2003. Child labour, school attendance and performance: A review. Geneva: ILO, 34p.

Owusu V, Kwarteye G. 2008. An empirical analysis on the determinants of child labor in cocoa production in Ghana. Kumasi: Kwame Nkrumah University of Science and Technology, 14p.

Parliament of the Republic of Ghana. 1992. The Constitution of the Republic of Ghana 1992. Accra: Parliament of the republic of Ghana, 188p.

Parliament of the Republic of Ghana. 2007. Labour Regulations, 2007 (L.I. 1833). Accra: Parliament of the republic of Ghana, 14p

Parliament of the Republic of Ghana. 2009. Education Act, 2008 (Act 778). Accra: Parliament of the republic of Ghana, 21p.

Ray R, Lancaster G. 2004. The impact of children's work on schooling: Multi-country evidence based on SIMPOC data. Geneva: ILO, 95p.

Ray R. 2000. The determinants of child labour and child schooling in Ghana In: Journal of African Economies 11(4): 561-590

Revallion M, Wodon Q. 2000. Does child labour displace schooling? Evidence on behavioural responses to an enrollement subsidy. In: The Economic Journal vol.110 (462): 158-175

Sitiuk M. 2007. Link between household's income and child labour [MSc.]. Kyiv: National University "Kyiv-Mohyla Academy", 41p.

Tuakli J, Miller A, Agyarko-Kwarteng T, Jones L. 2006. Situational analysis of vulnerable children in Ghana. Boston: World Education, 62p.

Tulane University. 2009. Third Annual Report: Oversight of public and private initiatives to eliminate the worst forms of child labor in the cocoa sector in Côte d'Ivoire and Ghana. New Orleans: Tulane University. Payson Center for International Development and Technology Transfer, 168p.

Tzannatos Z. 2003. Child labor and school enrollment in Thailand in the 1990s. Washington, D.C.: World Bank Publications 30p.

UNESCO. 2006. Country basic information. Available at www.ibe.unesco.org: Accessed 2015-02-06.

United Nations Development Programme. 2014. Human development report. Available at www.undp.org: Accessed 2015-01-27.

United Nations. 1989. Convention on the Rights of the Child. Geneva: UN, 15p.

Vigneri M. 2007. Drivers of cocoa production growth in Ghana. London: Overseas Development Institute, 4p.

World Bank. 2011. Supply chain risk assessment: Cocoa in Ghana. Washington, D.C.: World Bank Publications, 53p.

World Bank. 2012. Agribusiness indicators: Ghana. Washington, D.C.: World Bank Publications, 41p.

World Bank. 2015. Ghana-World Development Indicators Available at www.data.worldbank.org: Accessed 2015-01-27.

World vision. 2009. Fact sheet: Child labour. Melbourne: World Vision, 4p.

Zdunnek G, Dinkelaker D, Kalla B, Matthias G, Szrama R, Wenz K. 2008. Child labour and children's economic activities in agriculture in Ghana. Rome: FAO, Centre for Advanced Training in Rural Development, 112p

Annexes

List of annexes

Annex 1: Questionnaire for children of cocoa farmers

Questionnaire 1

My name is Miroslava Dorčáková and I study at Czech University of Life Sciences in Prague, Czech Republic. This survey will help me with writing of my master thesis. The main objective of my master thesis is to identify decisive factors for child inclusion into work in cocoa production and to analyze the relation between child work on cocoa farms and level of education. This questionnaire is anonymous and all the answers will be used only for my personal research.

1. **Gender:** Male / Female
2. **Age:** 0-12 years / 13-15 years / 15 years and above
3. **Education:** Primary / Secondary/ Tertiary

   For have many years have you attended the school?
4. **Number of family members in the household:** 0-5 / 6-10 / 11-15 / 16 and above
5. **Is your house located at the farm?** Yes / No
6. **Do you like to work on cocoa farm?** Yes / No
7. **Why do you like / do not like to work on cocoa farm?**
8. **Which kinds of work do you do?**

   Do you think it is hard work? Yes / No
9. **What equipment do you use on the farm?**
10. **Do you apply pesticides?** Yes / No
11. **Why do you work on cocoa farm?**
12. **Are you obligated to work on cocoa farm?** Yes / No
13. **Do you go to school?** Yes / No

    If no: Would you like to go to school? Yes / No

    If no: Why you do not go to school?

(If you do not go to school, please do not answer other questions)

14. How often do you go to school? Regularly / Occasionally

15. How do you feel during classes after your work duties?

16. How often do you work on cocoa farm? 7-6 days per week / 5-3 days per week / Less than 3 days per week / Sometimes

17. When do you work on cocoa farm? Morning / Afternoon

18. How many hours do you work on cocoa farm per day? 0-2 hours / 3-5 hours / 6-8 hours / 9 hours and above

19. When do you have school classes? Morning / Afternoon

20. Do you study at home after school? Yes / No

21. Is there any other activity would you like to do instead of work on cocoa farms? Yes / No

If yes, please name it:

22. Would you like to work on cocoa farm in the future? Yes / No

If no: Which profession would you like to do?

Annex 2: Questionnaire for cocoa farmers

Questionnaire 2

My name is Miroslava Dorčáková and I study at Czech University of Life Sciences in Prague, Czech Republic. This survey will help me with writing of my master thesis. The main objective of my master thesis is to identify decisive factors for child inclusion into work in cocoa production and to analyze the relation between child work on cocoa farms and level of education. This questionnaire is anonymous and all the answers will be used only for my personal research.

1. **Gender:** Male / Female
2. **Age:** 18-25 years / 26-40 years / 41-55 years / 56 years and above
3. **Education:** Primary / Secondary/ Tertiary

   How many years did you attend the school?
4. **Profession:**
5. **Number of family members in the household:** 0-5 / 6-10 / 11-15 / 15 and above
6. **Average monthly household income:** 0-300 Cedis / 301-600 Cedis / 601-900 Cedis / 901 Cedis and above
7. **Is your house located at the farm?** Yes / No
8. **How many people work on this farm?**
9. **For how long do you work on the cocoa farm?**
10. **Did you grow up at the farm?** Yes / No
11. **Did you always want to work on cocoa farm?** Yes / No

    If no: Which profession would you like to do?
12. **Do you have children?** Yes / No

    If yes: How many children do you have?

    If yes: Do they help you with the work on the farm? Yes / No

    If yes: Do they go to school regularly? Yes / No

13. **What are the main reasons (according to your opinion) of child inclusion into work on cocoa farm?**
14. **Do you know some child working on farm instead of schooling?** Yes / No
15. **Do you think that work on cocoa farm is more relevant for children's future than going to school?** Yes / No

    If yes: Why do you think so?
16. **Do you think that child work on the cocoa farm (even few hours per day) can influence school results of child?** Yes / No
17. **Which kinds of works do children normally do on the farm?**
18. **Are children involved also in post production, selling or any other activity related to cocoa production?** Yes / No

    If yes, please name it:
19. **Do children use dangerous tools or do they apply pesticides?** Yes / No
20. **Would you hire a child to work full time on the farm?** Yes / No
21. **How often do children work on cocoa farm?** 7-6 days per week / 5-3 days per week / Less than 3 days per week / Sometimes
22. **When do children work on cocoa farm?** Morning / Afternoon
23. **How many hours do children work on cocoa farm per day?** 0-2 hours / 3-5 hours / 6-8 hours / 9 hours and above
24. **Would you want your children to work on the farm?** Yes / No

    If no: Where do you want them to work?

Annex 3: Data table for parameter's estimation in SW Gretl

Respondent	Child's involvement into work on cocoa farm	Unit vector	Household income	Number of farmer's children	Education of farmer
	1-child works on cocoa farm , 0-child does not work on cocoa farm	Constant	Average monthly household income in GHS	Number of children per one farmer	Number of years of schooling per one farmer
	Y	X1	X2	X3	X4
1	0	1	282	4	9
2	0	1	300	7	6
3	0	1	100	4	7
4	0	1	300	5	0
5	1	1	357	5	8
6	1	1	300	9	0
7	0	1	300	4	0
8	0	1	50	4	9
9	0	1	212	4	10
10	0	1	1000	4	9
11	0	1	1413	10	0
12	0	1	400	7	10
13	1	1	100	4	10
14	1	1	100	6	0
15	0	1	100	8	0
16	0	1	200	8	5
17	0	1	100	6	0
18	0	1	212	6	0
19	0	1	270	2	10
20	1	1	360	7	0
21	0	1	200	3	6
22	0	1	140	4	9
23	0	1	280	8	0
24	0	1	300	5	10
25	0	1	700	3	0
26	0	1	200	6	10
27	0	1	441	3	10
28	0	1	1000	9	6
29	1	1	100	6	0
30	0	1	375	7	10
31	1	1	187	7	8
32	0	1	200	6	10

33	0	1	200	5	9
34	0	1	300	6	12
35	0	1	150	3	10
36	0	1	562	3	12
37	0	1	200	3	10
38	0	1	200	7	10
39	1	1	300	6	15
40	0	1	200	6	10
41	0	1	230	7	8
42	0	1	200	3	2
43	0	1	250	4	2
44	1	1	100	5	9
45	0	1	450	4	10
46	0	1	100	6	9
47	1	1	100	8	10
48	0	1	250	9	2
49	0	1	150	4	2
50	0	1	300	5	4
51	0	1	350	5	1
52	0	1	190	3	6
53	0	1	670	5	5
54	0	1	600	0	15
55	0	1	700	3	0
56	0	1	320	2	6
57	0	1	450	2	6
58	0	1	500	4	15
59	0	1	300	4	8
60	0	1	150	1	10
61	0	1	300	8	0
62	0	1	200	5	0
63	0	1	290	7	0
64	0	1	210	4	0
65	0	1	300	6	5
66	0	1	200	5	13
67	0	1	190	4	10
68	1	1	650	6	0
69	1	1	400	6	15
70	0	1	200	5	4
71	0	1	1000	3	9
72	0	1	1000	2	0
73	1	1	1500	5	6
74	1	1	1500	5	15
75	0	1	300	7	3
76	0	1	200	2	9

77	0	1	1000	3	3
78	0	1	212	3	10
79	0	1	230	13	5
80	0	1	553	7	10
81	0	1	353	3	10
82	1	1	200	11	11
83	0	1	120	3	0
84	1	1	300	5	3
85	1	1	160	5	10
86	1	1	282	6	0
87	1	1	375	4	3
88	1	1	200	9	0
89	1	1	300	4	12
90	1	1	750	6	6
91	1	1	950	7	10

Annex 4: Outputs from SW Gretl using non-linear logit model for binary data

i. Showing slopes at mean

```
Model 1: Logit, using observations 1-91
Dependent variable: Y
Standard errors based on Hessian

             coefficient    std. error       z         slope
  ------------------------------------------------------------
  const      -3.20105       0.918185      -3.486
  X2          0.000651466   0.000766395    0.8500   0.000117348
  X3          0.287547      0.118327       2.430    0.0517958
  X4          0.0461710     0.0555199      0.8316   0.00831678

Mean dependent var   0.252747   S.D. dependent var   0.436995
McFadden R-squared   0.071370   Adjusted R-squared  -0.006383
Log-likelihood      -47.77369   Akaike criterion     103.5474
Schwarz criterion    113.5908   Hannan-Quinn         107.5993

Number of cases 'correctly predicted' = 66 (72.5%)
f(beta'x) at mean of independent vars = 0.180
Likelihood ratio test: Chi-square(3) = 7.34327 [0.0617]

           Predicted
             0    1
  Actual 0  65    3
         1  22    1

Excluding the constant, p-value was highest for variable 4 (X4)
```

ii. Showing p-values

```
Model 2: Logit, using observations 1-91
Dependent variable: Y
Standard errors based on Hessian

             coefficient    std. error       z      p-value
  ---------------------------------------------------------
  const      -3.20105       0.918185      -3.486    0.0005  ***
  X2          0.000651466   0.000766395    0.8500   0.3953
  X3          0.287547      0.118327       2.430    0.0151  **
  X4          0.0461710     0.0555199      0.8316   0.4056

Mean dependent var   0.252747   S.D. dependent var   0.436995
McFadden R-squared   0.071370   Adjusted R-squared  -0.006383
Log-likelihood      -47.77369   Akaike criterion     103.5474
Schwarz criterion    113.5908   Hannan-Quinn         107.5993

Number of cases 'correctly predicted' = 66 (72.5%)
f(beta'x) at mean of independent vars = 0.180
Likelihood ratio test: Chi-square(3) = 7.34327 [0.0617]

           Predicted
             0    1
  Actual 0  65    3
         1  22    1

Excluding the constant, p-value was highest for variable 4 (X4)
```

Annex 5: Photos from the research with description

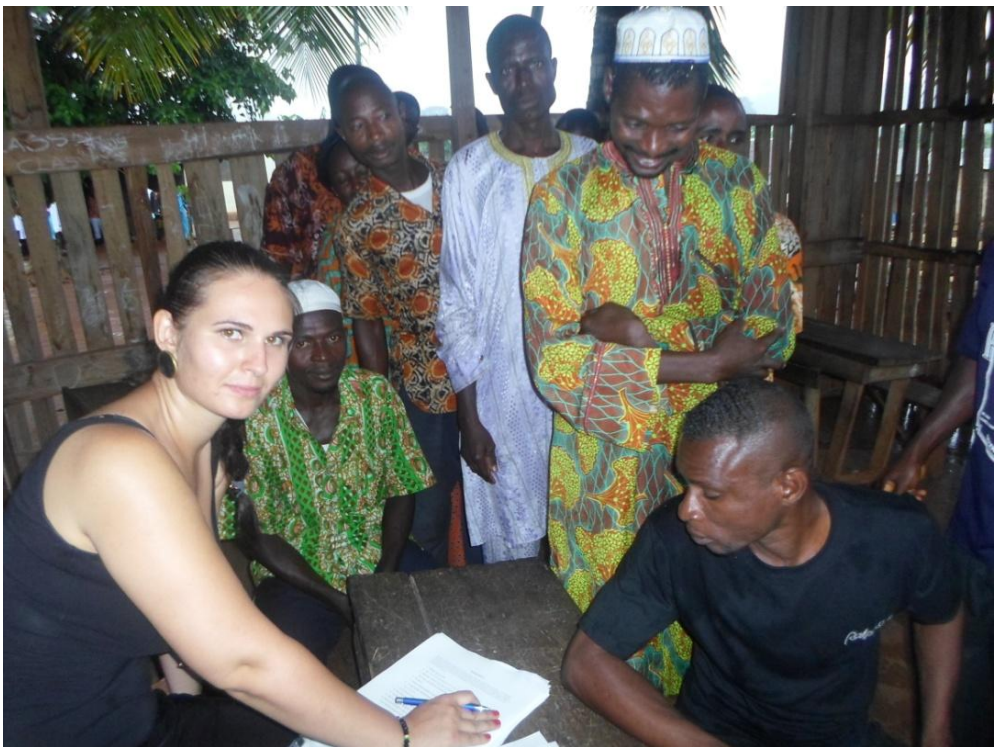

Photo 1: Interviews with cocoa farmers in village Boako, Sefwi-Wiawso district

Photo 2: Interviews with children of cocoa farmers in village New Adiembra, Sefwi-Wiawso district

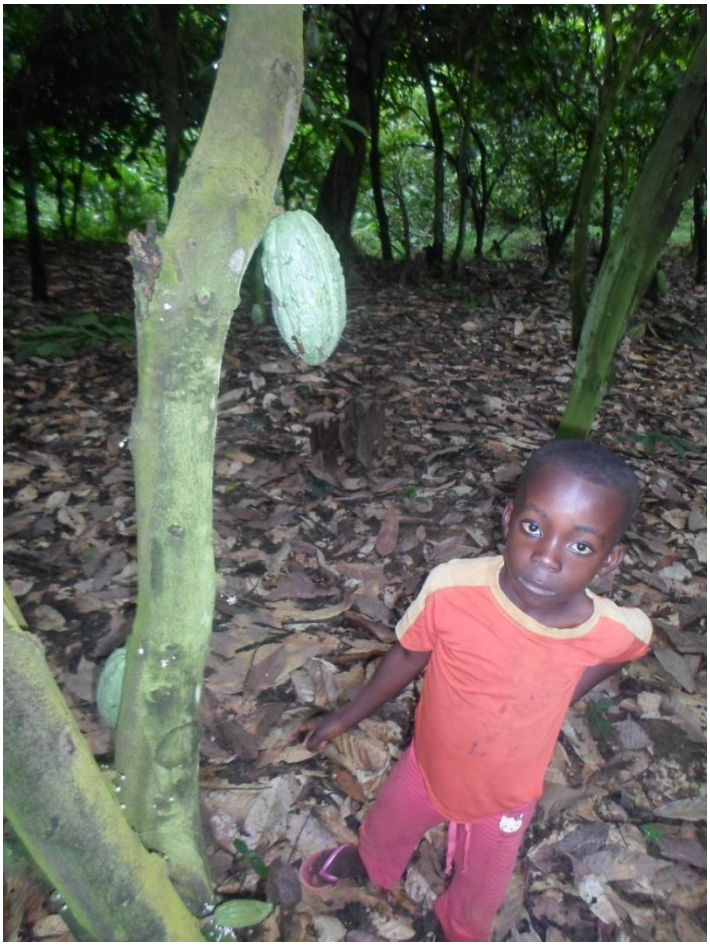

Photo 3: Cocoa farm in village Boako, Sefwi-Wiawso district

Photo 4: Drying of cocoa beans in village Boako, Sefwi-Wiawso district