CHILDREN'S TIME USE IN GHANA: DETERMINANTS AND EFFECT ON SCHOOL ATTENDANCE

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DECLARATION

I, LINDA MORKA, hereby declare that this thesis is original research undertaken by myself under the guidance of my supervisors. With the exception of references to other author's work which have been duly cited, this thesis has neither in part nor whole been presented for another degree elsewhere.

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ABSTRACT

Children spending excessive time on market and domestic chores is common and pervasive in developing countries. This time input contributes to household's current consumption which is beneficial to improving the current standard of living in the households. However with the tendency of affecting children's welfare. There has been a lot of research on time use of children with more focus on children's time on market activities whiles less attention is given to the hours children spend on domestic chores or housework and its possible consequences on a child's welfare. It is for this reason that this thesis seeks to ascertain the determinants of children's time use on market and domestic chores in Ghana and examine its effect on school attendance. Data from the 2012/2013 Ghana Living Standards Survey is used for the empirical analysis.

The study adopts OLS and Heckman-Two Step regression techniques to examine the determinants of children's time on domestic chores and market activities, respectively. The analysis reveals that the demographic characteristics of the child in terms of age, gender, and location, distance to water source, access to electricity and education of the head of household are significant factors in influencing children's time use. Boys spend more time on market activities than girls whiles girls spend more time on domestic activities than boys. Also the study revealed that fostered children spend more time on domestic chores and market related ventures than children co-residing with both parents. The consequences of children's involvement in market activities and domestic chores on school attendance was explored using Heckman- Two step regression. The study results reveals that children's time spent on market activities negatively and significantly affects school attendance. Time spent on domestic chores, however, was not significant.

It is recommended that efforts by government and civil society organizations and NGOs be stepped up to reduce the incidence of child labour, by limiting the involvement of children in both the labour market and domestic enterprises as well as excessive household duties to free time for their education.

DEDICATION

This thesis is dedicated to God whose wisdom and grace has seen me through to completion and also for providing the resources and the help I needed for this project.

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LIST OF ABBREVIATIONS AND ACRONYMS

SNA	United Nations Systems of National Accounts
GLSS	Ghana Living Standards Survey
ILO	International Labour Organization
UNICEF	United Nations Children Fund

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CHAPTER ONE

INTRODUCTION

1.1 Background

Traditional theorists suggest that households engage in several activities that require the use of time. These activities are grouped into two; economic and non- economic activities. According to the International Labour Organization (ILO), economic activities or market activities are activities that fall under the United Nations Systems of National Accounts (SNA). These activities include all production and processing of primary products for the markets (ILO, 2000). However non-economic activities or non- economic work involve providing services to own family members. Examples of non-economic activities are community service, volunteer work and domestic chores or household chores. However, these activities fall outside of the SNA activities. A household therefore either spends time doing economic activities or non-economic activities.

Time is finite. The issue surrounding time use is basically the competing time demand that exists between economic and non-economic activities. More time can only be spent on one activity at the expense of the other activity. Every individual is limited to a time of 24 hours in a day. The more an individual spends time on economic activities, the less the available time for non-economic activities, and vice versa. Cultural roles in the traditional African societies require women to spend most of their time in household roles thereby limiting their time spent in participating in market work. However men tend to spend most of their time on productive activities as against non-economic activities. These gender based cultural roles which allow men

to spend more time on economic activities whiles women spend more time on non-economic activities may perhaps explain differences in economic outcomes between men and women in most African countries.

Child time use is also grouped into economic and non-economic activities. There exists an intergenerational linkage from children's time use to adult outcomes. Whaba's (1988) study linked a child's time usage to its future outcomes. That is, a child who grows up being socialized into spending more time on primary roles (non-economic activities) within the home confines is likely to even pass on those values and norms to subsequent generations. This disadvantage creates the relevance in understanding children's time use. There is growing interest in children's time use especially on their competing time demand across activities because of the possibility of childhood time use being able to affect their adult life. According to Larson (2001) children's time use is linked to an early stage transformations in skills acquisition, and the skills acquired reflects children's future development. However, a child's excessive involvement in market work may serve as a deterrent to its development. This propels an early contribution from the child to the household rather than anticipating future contributions. The disadvantages associated with a child's involvement in economic and non-economic activities is compounded under the issues of child labour. Emerson and Souza (2007) established a threshold in their study and stipulated that a child engaged in market work for more than 20 hours a week is a child labourer. Additionally, children are confronted with competing demand for their time between schooling and non-schooling activities. Schooling has the tendency of improving a child's welfare in the future but this welfare is adversely affected when a child is involved in excessive non-economic or economic activities. If a child is spending more hours on market and non- market work then the schooling of

that child will be negatively affected which may affect the quality of human development. A study by Lee (1994) cited in Larson and Verma (1999) recalls a situation where women in East Asia do socialize their children away from excessive involvement in domestic chores with the hope of improving their schooling and future labour market outcomes. In short, if children engage in non-economic activities and their schooling is affected, those who go to school and attain higher education qualification might in future have better opportunities and enjoy higher incomes.

As stated above, there are advantages and disadvantages associated with children spending excessive time on both economic and non-economic activities. The advantages include earning an income for the home, being socialized to develop home skills for future family roles, amongst others. The disadvantage is when an involvement in these activities causes harm to the child's schooling. Children in most parts of the world spend more of their time on schooling than non-schooling activities (economic and non-economic activities). There is a higher schooled population in East Asia because of the fact that children in Asia spend less time on domestic chores which is a non-schooling activity (Lee, 1994; cited in Larson and Verma 1999). However the case is different in Africa. Children in African countries usually spend more time on non-economic activities than schooling activities and Ghana is no exception (Andvig, 1998). The higher rate at which children in African countries involve in domestic and market work may be detrimental to their development. Nankhumi, et al, (2004), posit that a large part of child labour involves time spent on domestic tasks such as fetching water and wood. Similarly, there are instances where children especially daughters may forfeit schooling to help with child care and daily housework (Homa and Hoodfar, 1986)

1.2 Problem statement

Human capital is crucial to economic growth and development. According to Solow (1956), growth is a function of capital stock, technology and labour force. Technology and labour is combined and termed as human capital in the model. This indicates the possession of knowledge which affects the effectiveness of labour force in the production process. Through schooling human capital is accumulated. In response to this, Ghana adopted a free fee educational policy as well as other programmes like school feeding programmes, Livelihood Empowerment Programmes, all targeted for the poor and at improving children's enrollment rate and attendance. Despite the efforts and interventions, children's progression and regular attendance is still low and this is likely to cause a major setback to human capital growth in the economy even though enrollment rate is periodically showing impressive rates (see Ghana National Education Assessment Report, 2012). However, although human capital is very important in the development of a country, there are certain obstacles that hinder the attainment of human capital improvements which normally persists amongst children of school going age. One of the most profound and talked about issue is the competing demand for children's time between schooling, labour market activities and domestic or household duties. A child's excessive involvement in non-schooling activities (economic and non-economic activities) posits a negative impact in child's development. Excessive involvement of a child in non-schooling activities is defined in the contexts of being exploitative, abusive, and harmful or any activities that affects schooling. According to the statistics from UNICEF (2005), nearly one in four children are excessively involved in these activities globally.

Child labour is defined as any activity that is harmful to a child, and which may affect a child's development. Aside the fact that there are benefits that a child gains by involving in economic and non-economic activities, the excessive involvement of a child in these activities may hamper the development of the child as well as the welfare of the child. Therefore if the child is spending more time on non-schooling activities which adversely affects schooling then it is tantamount to child labour. Child labour is associated with a lot of issues that are very disastrous to the present and future life of children. Child labour can be a source of poverty, powerlessness and can even lead to educational disadvantage (Brown, 2011). In terms of educational attainments, children who are child labourers are more likely to leave school early or perform poorly in their academic work. There exists a strong link between child labour and school dropouts (ILO, 2010), child labour and grade progression (Akresh and De Walgue, 2008) and child labour and grade attainment (Bhalotra and Heady, 2003). In addition, it is argued that the gap that exists between a child labourer and a non-child labourer in learning is wide. The expected success gap between children who are involved in child labour and those who are not in language and mathematics is 17 per cent (ILO, 2010).

Further, poverty is one of the major causes of child labour, and Child labour is one of the most powerful motors in transmitting poverty across generations (Wahba, 1998). Unfortunately, children who have experienced restricted opportunities to attain education will also receive lower wages when they reach adulthood. A study by Emerson and Souza (2003) for Brazil showed that people who start work as children end up with lower earnings as adults and this transcends to subsequent generations. Consequently, child labour can deepen poverty levels and widen inequality gap in the future.

Child labour can be intergenerational. A study by Emerson and Souza (2003) on Brazil revealed that amongst 13.9% children in the labour force, 70.6% of their fathers were child labourers, and 37.2% of their mothers started working at age 14 or younger. In addition 17.3% of all children belonging to a family in which the father was involved in child labour are child labourers. On the other hand, 5.9% of all children that belong to a family in which the father was not involved in child labour are child labourers. Similarly, their study showed that of all children who belong to a family in which the mother was a child labourer, 24.3% are child labourers. However of all children that belong to a family in which the mother was not a child labourer, approximately about 7.8% are involved in child labour. Also, a daughter whose father was a child labourer is approximately 8 times more likely to be a child labourer as compared to a daughter whose father was not. All these suggest the intergenerational nature of child labour.

The devastating nature of the effect of child labour has led to the formulation and implementation of policies to prevent the prevalence of this menace called child labour. In September 2000, 187 countries committed themselves to ensuring that child development based on human rights principles became a global reality by 2015. Consequently the Millennium Development Goals highlight policies aimed at curbing child labour. ILO and UNICEF happen to be the two governing bodies in charge of child protection. Therefore ILO which is more concerned about the involvement of children in economic activities emphasize the need to provide free, compulsory and quality education with a particular focus on girls in their policies and programmes. The removal of barriers to education such as school fees will encourage school enrolment which will lead to a reduction in the opportunity cost of time spent in school. UNICEF on the other hand, target policies that stems children's involvement in both economic and non-economic activities so

as to increase the time spent in school especially for girls. UNICEF believes that girls in developing countries are involved in excessive household chores which is less compatible with schooling. This was justified in the study of Andvig (1998) in which he estimated that at least 95% of child labour from developing countries emanates from involvement in non-economic activity. Although a lot of policies have been formulated and implemented to curb child labour in developing countries, progress report currently shows that the prevalence of child labour is highest in sub-Saharan Africa. ILO estimated that 21.4% of children are involved in child labour in sub-Saharan Africa (ILO, 2013). Similarly UNICEF also estimated that 25% of children in sub-Saharan Africa are involved in child labour. Boys were mostly involved in the labour market whiles girls dominated domestic work (UNICEF, 2013). It has been indicated that some countries in the developing world are considered off track in attaining universal basic education for all (Easterly, 2007). This fact poses a problem for developing countries because if a higher proportion of children are not in school, it means that they are spending their time doing something else, probably involved in child labour.

Differences in definition of child labour raises issues for developing countries. There are some countries that consider a child's involvement in domestic activities and economic activities as an indicator of child labour. Such countries includes Costa Rica, Malawi, Ethiopia, Gambia, Honduras, and South Africa. Costa Rica, for instance, considers the effects of a child's involvement in domestic chores and economic activity to be similar since both of them conflicts with the child's participation in school. However for some countries, child labour only emanates from a child's involvement in economic activities (countries like Bangladesh, Belize, Mongolia, Kenya, Tanzania and Ghana). In Ghana, child labour has been defined solely as a child's

involvement in economic activity (Edmonds, 2008). However, Gibbons et al. (2005) are of the view that domestic chores is tantamount to child labour and therefore the exclusion of it would underestimate the number of children involved in child labour. They therefore undertook a study for sub Saharan Africa upon which they estimated the rate of child labour to be 25.3% excluding domestic chores, and 30.8% when domestic chores is included. Considering these figures at gender level, the rate of child labour for girls increased from 23.6% to 30.2% and for boys from 27.0% to 31.5% when domestic chores was added. Ilahi (2001) observes that the narrow view of child labour would have implications for the design of policy. Consequently, Bhalotra and Heady (2003) assert that the design of policy to address child labour in Africa must recognize the fact that most children work for their parents.

Ghana Statistical Service (2014) reports the involvement of children in economic and non-economic activities. For children who participated in economic activity, 76.4 percent were involved in child labour and 49.7 involved in the worst forms of child labour. For non- economic activity, the report reveals that of children who participated in household chores, 25.3% were involved in child labour or household labour while 16.6 percent were involved in hazardous forms of child labour. The report indicates a higher proportion of male child labourers and those involved in the worst forms of labour from the household sector than the females. Whiles 26.7% and 23.9% of male children were involved in child labour and worst forms of labour from the household sector, respectively, results indicate a lower proportion of female child labourers from the household sector; 18.5% and 14.8%, respectively.

These statistics clearly shows that a high proportion of Ghanaian children are involved in child labour emanating from excessive involvement in market and non-market activities. The implication is that, in spite of the fee free educational system as well as other programmes like school feeding programmes at the basic level which has reduced the direct cost of sending a child to school, indirect costs pose a possible hindrance to a child's human capital investment by parents. The Ghana Statistical Service (2014) Report reveals that about 35% of female children claimed to have missed classes as a result of involvement in an economic activity whiles 51% of missed classes for helping out at home. For males, 49% claimed to have missed classes on account of helping out at home. Similarly the Ghana National Education Campaign Coalition Report for 2013 reveals that girls, especially those in rural communities in Ghana are not able to match their male counterparts due to heavy chores which make their participation in class low and thus reflects in academic performance (www.voicesyouth.org). Finally the Ghana Statistical Service (2014) report reveals a declining trend in children's involvement in economic activities whilst an increasing proportion of children spend excessive hours on household chores in Ghana. In sum, a high proportion of children are involved in both market and non-market activities which may be detrimental to their education. As these persists, it is likely to cause a major setback to human capital growth in the economy.

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1.3 Research Questions

From the aforementioned, the relevant questions to be asked are the effect of market and non-market activities on school attendance. Hence this study seeks to find out

1. What are the determinants of domestic time use of children in Ghana?
2. What are the determinants of market time use of children in Ghana?
3. What effect does time usage on domestic chores and in the labour force have on school attendance?

1.4 Objectives

The objectives of the study are to:

1. Examine the determinants of time use of children on domestic chores in Ghana.
2. Examine the determinants of time use of children on market activities in Ghana.
3. Assess the effect of time spent on domestic and market activities on school attendance.

1.5 Significance of the study

Edmonds (2008) indicates that only 25% of studies on time use of children looked at the consequences and effect of children's involvement in non-economic activities (especially household chores). Children's excessive time involvement in economic activities have received more attention (Edmonds, 2008) in developing countries, even though children's excessive involvement in non-economic activities like household chores is more prevalent in developing countries. Meanwhile both time use whether economic or non-economic, an excessive involvement of a child in these activities suggests a constraint to a child's welfare by these studies (Levision et, 2005; Levision and Zibani 2010; Jensen and Nielsen 1997; Psacharopoulos, 1997; Bhalotra and Heady 2003; Assad et al 2009).

However with regards to studies on children's work activities in Ghana, there is more concentration on the market activities. Heady (2003) focused on the activities of children outside of the household on a child's learning achievements. Using the test administered to children on reading and mathematics, results indicate a negative effect of children's participation in economic activities on education. However Zdunnek (2008) suggest a higher incidence of child labour from a child's involvement in the agricultural sectors in Ghana. Studies by Bhalotra and Heady (2003) and Boozer and Suri (2001) on Ghana linked a child's involvement in the agricultural sector to education, in which they posit that a significant tradeoff exists between child labour from the agricultural sector and schooling. This is more pronounced for boys than girls. Nonetheless Heady (2003) admitted to the little attention given to other opportunity cost of school: the role of household work. According to him, children's involvement in market or economic activities have

been on the forefront of studies in Ghana. Therefore there is need for more studies on the consequences and causes of children's involvement in domestic chores.

According to Ilahi (2001), for policy purposes it is necessary to study the separate effects of children's activities. This is justified in Webbink et al (2010) study in which they explained that child labour has many faces and that what determines one might differ in the other, hence this study objectives.

1.6 Organization of the study

The study is organized into five chapters. The preceding section will be followed by chapter two which reviews the existing literature on the study; both the theoretical and empirical. Chapter three focuses on methodology which will include the theoretical framework, empirical model, data types and sources. In chapter four, the results obtained from the study will be presented and discussed. Finally, chapter five presents the summary, conclusion, policy recommendation and limitations to the study.

CHAPTER TWO

THEORETICAL AND EMPIRICAL REVIEWS

2.1 Introduction

This chapter reviews the relevant literature on the study area. This review covers the theory of time use as well as a number of empirical studies that have been done in the area of children's involvement in domestic chores and its effect on school attendance. The importance of this review is that it will bring to the fore different research findings and highlight any existing gaps in the literature.

2.2 Definitions/Concepts of Time Use

2.2.1 *Definitions/Concepts of time use based on nature of work*

Work activities of children are grouped into System of National Accounts (SNA) activities and Non-SNA activities. SNA is the internationally agreed standard set of recommendations on how to compile measures of economic activities. These activities include all production and processing of primary products for the markets, which comprises of wage employment, self-employment, participation in agriculture and construction (ILO, 2000). Likewise, non-economic activities or Non-SNA activities involve providing services to own family members and example of non-economic activities are community service, volunteer work and domestic chores or household chores. In sum, domestic work indicates time spent in chores, shopping, etc. which is performed for the child's own household whiles market work indicates paid work and other economic activity

done outside of the child's household as well as market work inside the household or on the family farm or enterprise. These work activities comprise the time use of the child (Edmonds, 2008). Table 1 summarizes the various elements in the definitions discussed above.

Table 1 Definition of time use based on nature of work

Class Term	Definition
SNA Economic Activities	
Economically active	Participates in the production of economic goods and services or is unemployed and seeking such employment
Employed	Economically active, excluding the unemployed, but including those temporarily out of work with a formal connection to a job
Economic work	Economically active, excluding the unemployed and those temporarily out of work
Market oriented economic work	Economically active in the production of goods or services for the market or barter
Wage work	Receives cash or in-kind payments for economic work
Non-market economic work	Economically active in the production of goods or services for own consumption Subcategories: Own account production of goods and services Own account construction and substantial repair services by owners of dwellings Own account collection and gathering activities
Family work	Economic work in own or family business or farm
Market work	Economic work Subcategories: Inside household Outside household (sometimes separated into paid and unpaid)
Non-SNA Activities	
Non-economic work	Participates in productive activities that are outside of the SNA definition of economic activity Alternatives: Non-economic activity, non-market household activity, non-market household production
Community service and volunteer work	Non-economic work provided outside of own household
Domestic chores	Provides services to own family members Alternatives: Household chores, housework (sometimes excludes shopping) Subcategories: Child and elder care Cooking Cleaning

	Small repairs Shopping for household goods and services
Domestic work	Non-economic work excluding community service and volunteer work

Source: Edmonds (2008)

The 1989 UN Convention stated clearly the rights entitled to a child which include the right to be protected from economic exploitation and from performing any work that interferes with his or her education or harmful to his or her mental, spiritual or social development. Any work from this definition implies an unrestrictive description of a child's work which could be a child's excessive involvement in economic or non-economic activities. Excessive time spent in such activities are compounded under the issues of child labour. Edmond (2008) posits that, when it comes to issues of child labour the researcher is the main decider of the work activity used so far as the work activity identified poses harm to the child's welfare. Edmond (2008) reviewed 48 studies on child labour from 1993-2007. Fifteen of the studies defined child labour as a child's involvement in market work, whiles six combined both market and domestic work. Ten of the studies focused on paid work and a couple of others failed to unambiguously define child labour.

2.2.2 Definitions Based On Work Intensities

Besides the type of work, another definitional issue focuses on the duration of the activity or hours of work. According to Hoop and Rosati (2013) a definition of child labour based on just

participation in activities and not the intensity of the work creates a rather vague picture of child labour because that same activity may either promote social development or destructive outcome on the child's welfare). Therefore what differentiates the outcome is not the participation alone but the intensity which is measured by the hours spent on an activity. Blackden and Wodon (2006) observe that there has been a neglect by studies in using hours worked on an activity as a yardstick for child labour. Beegle et al (2004) defined child labour by capturing children who have worked in paid work/ market work/ domestic work for more than 14 hours. Similarly, studies such as Assad et al (2009) and Levision and Moe (1998) have adopted this definition. However Emerson and Souza (2003) and Edmonds and Pavnick (2005) defined child labour using a time threshold in which hours of work in domestic chores and market work is greater than or equal to 7 hours.

2.2.3 Definition of Child Labour Based On Age Criteria

The ILO has clearly defined child labour on the grounds of its intensities, i.e. hours of work and age criteria with a narrow focus that is a child's involvement on just economic activities. Child labour was defined as:

1) Children between 12-14 years of age who work in an economic activity for 14 or more hours

2) Children between 15-17 years who are engaged in hazardous work and working for 43 hours.

Likewise domestic chore is a communal and customary form of work undertaken by children in their own homes or in a third party household. Levision et al (2005) defined domestic chore as an activity that starts off as a small task then gradually increases in complexity and workload. It

becomes essential to introduce work thresholds backed by age limit. Thus, UNICEF defined child labour on the grounds of work hours and age criteria but included domestic chores as opposed to the ILO restrictive definition based on economic activities. These includes:

i) An hour of economic activity or 28 hours of domestic activity for children aged 5-11 years.

ii) 14 hours of economic activity or 28 hours of domestic activity for children aged 12-14 years.

iii) 43 hours of economic activity for children aged 15-17.

However only few studies have captured the age criteria and these include studies like Blanco and Valdivia (2006) and Guarcello et al (2004). They defined child labour as market work for children under the age of 12-13 who worked for more than 14 hours. Similarly Guarcello et al (2006) adopted two definitions, first for hours of work greater than 14 hours for children in the age range of 12-13 years and children in the same age range working for hours greater than 28.

2.3 Theoretical Review

The theoretical review is guided by Becker's' (1991) theory of home production. Many theoretical underpinnings guide the studies of children's excessive time spent on non-schooling activities usually termed as child labour, especially if excessive involvement in these activities affects schooling. The theoretical underpinning will be classified under three broad terms and these are constraints, agency and incentives.

2.3.1 Agency

Agency in this study refers to the employer of labour, which is those who demand for child labour. Certain theories underlay the perception of child labour or why child labour is demanded. However some of these theories are propounded to suit children's involvement in the labour market in which it has been affirmed to be more relevant in developed world. Conversely, in developing countries, child labour is still prevalent but mostly within the households where parents are the employers (Andvig et al 2001). Hence these theories will be presented to better suit the understanding of the developing countries according to the modifications of other theorist.

2.3.1.1 Nimble theories

The nimble theory posits that children have a comparative advantage in some kinds of occupation than adults. The comparative advantage of children over adult in this theory is justified through bodily features of a child: strained eyes, nimble fingers and as result being able to fit in some aspect of traumatizing and dehumanizing jobs. This was mostly associated with children's involvement in the mining sector (Brown et al, 2001). Their ability to use their nimble finger to pass through narrow passages made them more suitable for the job and as a result demanded more by employers than adults. Nimble theory has also been applied to the garment sector. It was indicated in India that sweatshop owners preferred to employ children because of their thin, nimble fingers (Ribhu and Agrawal, 2009). Further studies suggest that, there are more evident and justifiable reasons why employers demand children's labour, some of the reasons mentioned are; shortage of labour, and the benefits of hiring children who are more likely to paid less due to the low productivity and quality they offer (Grimsrud, 2001; Edmonds, 2008).

An aspect of child labour emanates from a child's time on production for the market, whiles another aspect emanates from production for the home. The applicability of nimble's theory in developing countries, transcend beyond the industrial setting where the agents or employers are non-relatives seeking to exploit the child for profit maximization motive. Edmond (2003, 2008) asserts that majority of child labourers are involved in agriculture and domestic activities where parents become the employers of children. Parents employ their children in the household, family enterprise, family farms etc. (Brown et al 2001). A more appropriate theoretical underpinning according to Isvan (1998) is the Chayanov theory of peasant economies.

Chayanov (1966) propounded the theory of peasant economies under the premise of consumption labour balance principle. This implies that household work and even to the extent of increasing its work until it meets the needs of the households. This work load is worsened as family size increases. In order to meet with the pressure of consumption, household members will have to work for longer hours, increase their self -exploitation. Also this can lead to a situation where they may rent more lands leading to more hours of work. However due to the fact that this production is for lively sustenance and not for profit making or commercial purpose, Brown et al, 2001 posit that peasants families will make intensive use of all its members. There are possibilities of child labour emanating from this family enterprise ventures. Faweett et al (1974) the foot theoretically that, in industrialized world, parents may decide to have kids on the premise of affection however in a peasant economy the economic value of children may be a motivation.

In sum, the demand for child labour could be as a result of decisions within the household influenced by the parents or caregivers (Grimsrud 2001). There exists two main decision making process in the household. This will be further explained below under the game theory model.

2.3.1.2 Game Theory Model

This is broadly categorized into cooperative and non-cooperative bargaining model. Cooperative bargaining models also called collaborative decision making involves a household negotiation process where outcomes are beneficial to all members of the households. This creates a household environment that is universally governed by altruism. Altruism is when the utility maximizer maximizes the benefit of all household members and not just its selfish interest. A non-cooperative model also called unitary decision making assumes that the utility maximizers are motivated to make decisions based on selfish motives rather than maximize the benefit of all household members. A single household unit is a unitary household decision model where one unitary person assumes the role of decision making in the household. In the case of child labour related issues, the utility maximizers are the parents and it is assumed that the parents are the decider in how their children's time are allocated. There are two main household decision making models. The unitary neoclassical household labour supply models and the collective models. Some theoretical reviews have assumed a non-cooperative household model where the parents act to maximize its own utility rather than the child's welfare (Basu and Van 1998; Krueger and Tjornhom 2005), whiles others have argued it is a collective bargaining situation (Basu, 1999).

2.3.2 Incentives

Incentive is basically the opportunity cost involved in current consumption over future benefits. That is, the return to work relative to alternative uses of time such as school attendance. Time is an important factor of supply. According to Becker (1965), household maximizes utility subject to market goods purchased and time of household members. Time input to produce these goods can be supplied by an adult or a child. The child's time input to home production signals time foregone from human capital investment. This is identified to be a primary cost to education, far more important than costs arising from tuition or fees. Following Becker's (1964) theory, parents invest in children's schooling up to the point where marginal costs equal marginal benefits. The opportunity cost of schooling is reflected by the forgone wage rate for child labour or time input to household production. A child's time is influenced by the current standard of living and the child's future. However the child's future depends on its parent's valuation, which If a parent or a caregiver places value on current consumption than future expectations, then that child will be placed in activities that breeds an early contribution from the child rather than anticipating future contributions.

2.3.2.1 Human Capital Theory

The larger the stock of human capital, the larger the earnings per unit of time that the child could get in the market in the future and therefore the higher the foregone earnings from diverting a unit of time away from the market (Becker, 1965). Development economists focus on the development of a child emanating from human capital investment. According to the development economists time in school is a good and time in non- schooling activities is a bad, hence decisions concerning

a child's time should be diverted towards the good and away from the bad. The hours a child spends in school is positively correlated with future earnings; if a child spends more hours in school, that child grows with higher educational attainment, more opportunities and higher income.

In sum, this is a future benefit to the household, assuming the child diverts a unit of time from the market for school. However if the current benefits derived from a child's earnings or time input to current household consumption is higher than the costs of schooling, this leads to forgone return to human capital investment.

2.3.3 Constraints

Households are bound by budgetary constraints and child time constraints. The household's lack of access to capital markets or the uncertainty in the child's future outcomes (as a result skeptic about borrowing for an uncertain future income) are a major constraint in equalizing educational expenditures across children. Basu and Van (1998) assumed that parents are altruistic and that households make decisions that directly affect the welfare of the child because of poverty. This Anker (2000) also attested to. According to his study, linking child labour to parental low altruism ought to be limited. This he classified into reasons. First, the survival of poor families may require income from child labour. Second, poor families seem more interested in current consumption so as to supplement and plummet income sources as this helps to ensure an income flow at all times so as to mitigate income shocks.

2.3.3.1 Risk Management Theory

This theory asserts that, children become an option when there is a need to augment household income. Basu and Van (1998) further highlighted on this through the Luxury Axiom and the substitution axiom theory. The luxury axiom posits that a family is driven to send the child to the labour market when and only if family's income from non-child labour sources drops very low. On the other hand, substitution axioms posits that adult labour and child labour are substitute, that is, adult labour can be replaced for child labour. Further, linking the luxury axiom and substitution axiom to home production, the theoretical underpinning holds bases for Rosenzweig (1977) assertion. Rosenzweig (1977) posits that mother and daughter's time in household production are substitutes and that as mothers allocate more time to market activity, household responsibilities and child care ought to be shifted which normally the burden is borne by the girls in the household.

In summary, the incentives and agency work hand in hand. Incentives is basically the opportunity cost involved in current consumption over future benefits. That is, the return to work relative to alternative uses of time such as school attendance. The agency here refers to the employers, in this case, the parents, as it is confirmed that most children in developing countries work for families and within households (Andvig, 2000). Parents or caregivers influence children's time allocation hence the resultant issue of low altruism because parents or caregivers may influence their children to work because the net returns to education are low and the returns to work experience are relatively large. In short, the benefits still depend on the value the parent places on improving the household current standard of living over future benefits. When these are binding, the opportunity cost of schooling becomes too high.

2.4 Determinants of Children's Time Use

2.4.1 Parental Altruism and Time Allocation

Parental altruism is basically parent's concern for the child's welfare (consumption, leisure, and schooling). The importance of altruism within families began to be recognized analytically by economists during the 1970s, following studies by Barro (1974) and Becker (1974). Because of the assumption of a unitary production model in child labour studies which says that the parents are the sole decision makers with regards to the children. In other words, the child's utility depends upon the parents' or care-givers utility (Krueger and Tjornhom Donohue, 2005). Therefore, it becomes a case of whether or not parents and care-givers are altruistic toward children. If altruism exists between parents and children, then it is expected that children will receive better investments in their welfare. However if low altruism exists then parents will place a greater relative weight on their own consumption or leisure than on that of their children.

Children's involvement in domestic chores may be viewed within a context of child socialization versus household demand for labour. Consequently, parents' altruistic behaviour towards children may play a crucial role in determining the time use of children in domestic chores. It may be argued that the more altruistic parents feel towards their children, the more children are likely to receive investments in their human capital. Blair (1992) and Klein et al (2009) suggest that parents assign household tasks to children as a socialization experience to promote responsibilities for family roles and obligations. Such domestic activities may not be detrimental to the physical, emotional, health or educational development of the child.

Conversely, parents with low altruism towards their children may lead to a situation where children may engage in more non-schooling activities as a result of increased engagement of children in domestic chores. Blair (1992) affirms that children are important source of household labour. Levison et al, (2005) and Nankhumi et al (2004) posit that children who spend long hours in domestic chores are less likely to attend school. Thus, excessive involvement of children in domestic chores may compete with schooling activities.

The issue of altruism is still difficult to ascertain empirically (Fafchamps and Whaba, 2006) especially between a parent and a child in that certain factors like illiteracy, household income and parental value other than low altruism could account for children's excessive involvement in work activities than schooling activities. Another aspect of altruism which is most common is the fosterage arrangement situation. Using the biological status of the child in the household as a proxy for altruism, Akresh (2009) and Fafchamps and Wahba (2006) find that fostered children spend more time on domestic chores compared to non-biological children resident in the household. Fafchamps and Wahba (2006), Hamilton (1964) and Becker (1991) attributed it to lack of genetic connections binding a care giver and a fostered child. In Bhalotra and Heady (2003) study for Ghana and Pakistan, both country data countered and recognized the possibility of altruism. For Pakistan, the hypothesis was rejected in that the results showed that children of household heads were more likely to work. Conversely for Ghana, the results showed that the sons of the head of household worked less. Altruism as earlier stated is difficult to measure empirically. Some have attempted to use the living arrangement of a child to measure altruism. The problem with this is that an inference on altruism cannot be made if the researcher cannot prove the fact

that a biological and non-biological child coexists and bound by the same environmental and socio-economic and parental factors (Case et al., 2004).

2.4.2 Living Arrangements of a Child and Time Allocation

In line with earlier inference on low altruism when child fostering comes into play, Hamilton (1964) theorized that altruistic behaviour between any two individuals is a decreasing function of the degree of non-genetic connection between them. According to him, a biological child is likely to be treated better than a non-biological child. However amongst the non-biological children a closer kin like distant relatives (grandchildren, nieces, or nephews), is likely to be treated better than non-relatives. That is, altruism is higher with a closer kin (distant relatives) and lower with a non-relative.

The term fostering and ophanhood has been used repeatedly in the literature. In sub-Saharan Africa, child fostering is a common social institution which is being operated on a large scale (Akresh 2009). There are several reasons why households foster children and these include the demand for child labour, to educate the child, parental death, etc. A study on Ghana by Klomegah (2000) showed that children are fostered for household labour. Similarly, Rolleston's (2011) qualitative study for Ghana, showed that foster children do not enroll in school at the same rate as non-fostered children living in the same households.

Several studies are increasingly paying much attention to the relationship that exists between the residential status of a child and child labour. This, Webbink et al (2010) indicate that more studies on the relationship between child fostering and child labour ought to be investigated as there exist a dearth of literature. Furthermore, just like complexity in the issues of child labour, child fostering poses that same attribute of complexity. That is, even though a child residing in a household with non-biological faces the likelihood of being a child labourers however, there are instances where being in a fostered home is even more preferred than residing with biological parents. According to a study by Moehling (2004), living in a fostered home is far better than a child living in a home bound by poverty and illiteracy. This was confirmed in Akresh's (2007) study. Using fixed effects technique, results from the estimations showed that a child living away from his biological parents is likely to work more, less likely to attend school, or might experience psychological problems. He went further to determine the short run and long run benefit of being fostered. Results showed that fostering experience exposes the child to better school access, better nutrition, or being exposed to an expanded employment.

However in spite of the supposed benefits of fostering on the child, a study by Djebbari and Mayrand (2011) for children in KwaZulu-Natal (South Africa) revealed otherwise. They investigated the impact of cash transfers on child fostering in South Africa. Results showed that having provided child support grant to poor children, fostered children would prefer to live with their parents as a result of the grants. Put another way, fostered children if given the grant would prefer to be beneficiaries living under the guidance and supervision of their parents only.

A study by Moehling (2004 showed that living apart from one or both parents is connected with lower school attendance and greater market work participation, especially for black children. He studied the intergenerational impact of fostering from the twentieth century to children's experiences now. Due to the racial differences in family structure most black children were made to live with relatives or foster families. Therefore holding all other things constant, he demonstrated that the family structure then had profound effects on children's welfare and outcomes today through the effect of low human capital investments resulting from spending less time in school and more time at work. A similar study by Grootaert (1998) for Cote d'Ivoire using sequential probit and multinomial logit affirms that the child's relationship to the head of household head had an effect on the probability of the child working. If the child is a son or daughter of the household head, the probability of working was lower and the probability of attending school was higher.

2.4.3 Educational Status of Household Head and Time Allocation

Educational level of the head of household appears to be another important correlate of children's work. Child's work is most common in households with low level of educated agents (Guarcello et al 2004). A study by Levision (1998), on Egypt, established an inverse relationship between schooling outcome and a child's work and as such, factors that tend to increase a child's work participation decreases a child's schooling participation. Results from the Levision (1998) study showed that girls with better living conditions and with more educated mothers spent fewer hours on domestic chores and more hours in school.

Similarly most studies have assumed that a mothers education significantly explains better a child's work participation and school participation more than fathers (Bhalotra and Tzannatos 2003). There are reasons why studies have separated both gender impacts on children's schooling and work. One of the reasons lies in the fact that children's substitutability in the home production task is between the mother and the child mostly a girl child, and as such there is a higher tendency of a mother's education influencing more on their daughters. Women who have had some schooling are more likely to get married later, survive childbirth, have fewer and healthier children, and make sure their own children complete school and this values are likely to be passed onto her daughter. In other words, a mother who is educated is more likely to have her daughter follow in the path of higher educational attainment.

A study by Ravallion and Wodon (1999) on Rural Bangladesh found both fathers and mothers education to have a negative effect on children's work participation. However, Cartwright and Patrinois (1999) attest to a mother's education influencing children's work whilst a study by Sasaki and Temesgen (1999) on Peru found no such effects. On the other hand, a study by Cigno and Rosati (2000) on India found no effect of father's education on children's full time concentration in school.

A paper by Glick and Sahn (1998) investigates the gender differences in the determinants of several schooling indicators (grade attainment, current enrollment, and withdrawal from school) in West Africa. The study employed ordered and binary probit technique. Result showed that improvements in education of household heads raises the schooling of children. This is in line with

Emerson and Souza (2003) study for Brazil in which they found that educational attainment of the household head significantly explains the schooling outcomes of both boys and girls.

Similarly a study by Grootaert (1998) for Cote d Ivoire using sequential probit and multinomial logit affirmed that parental education was the most significant determinant of a child's involvement in the labour force. An extra year of father's education increased the probability of a child attending school by 7 percentage points whiles for a mother by 3 percentage points. Whaba (1998) using a logit model showed that education of the head of household had a stronger negative effect on boy's work.

Evidently, we expect children of educated parents to be less involved in the hidden forms of child labour. Parents who received some education appreciate the value of schooling and its possible returns and will therefore be more driven to engage their children in schooling than in non-schooling activities.

2.4.4 Household Income and Children's Time Allocation

Poverty is an important factor in child labour. Therefore, an increase in the household's income is expected to reduce the participation of children in non-schooling activities.

In analyzing the effect of household income on child labour in Ghana, Blunch and Verner (2001) measured household income in poverty quintiles. Their study employed a univariate probit and

showed that a positive relationship exists between child labour and household income. That is, for children in households with lowest poverty quintile, there exists a 3% likelihood of that child been involved in child labour and 9% likelihood for those children in highest poverty quintile. Sasaki (2000) studying Ecuador, measured household welfare through income quintiles. His study employed a bivariate probit model. Results showed that 54% of children worked in households with lowest income quintile whilst a lower proportion (16%) of children worked in households with highest income quintile. This clearly indicates that household welfare exerts a negative relationship on child labour. Also the study went further to explore the effect household welfare has on schooling participation. He found that the likelihood of children's enrollment increased with household income.

A study by Abafita and Kim (2015) for Ethiopia using Heckman selection bias technique modelled household income as log of per capita consumption expenditure to correct for endogeneity issues. Results showed that child labour decreases with household income.

Catwright and Patrinos (1999) used the natural log of total monthly family expenditure (minus working children's contributions) to measure household welfare. Using multinomial logit model and sequential probit model to analyze the effect household income has on child labour, their results showed a negative relationship between family income and child labour participation. However Catwright and Patrinos (1999) having included the locational differential effect, results showed that children from the rural areas experienced higher proportion of child workers from the lowest quintile than children from the highest income quintiles. Similarly for the urban areas, more children worked in lowest income quintiles households than those from the highest income quintile

households. Conversely for household welfare effect on schooling participation, their study found out that children from higher income households were more likely to combine school and work than full time work. In all these studies, proxies have been used to counter the effect of endogeneity that comes with using household income. This Dar et al (2002) emphasized that children's contributions to overall household income is a major cause of endogeneity and as result using household expenditure is preferable because of possible measurement biases in estimates of household income.

Bhalotra and Heady (2003), used acres of land owned to measure household wealth in their study for Ghana and Pakistan. Their results refute the claims that child labour emerges from the poorest households. Their study, using land as an asset to measure income, found out that children work more in households with more land acres.

A study by Boozer and Suri (2001) investigated the choices involved in the tradeoff between a child's labour outside of household work and their schooling hours from a sample of data from Ghana in the late 1980s. The data collected over an 11 month period from the northern and southern parts of Ghana presented a counter effects on studies on household's income effect on child labour and schooling. They found no evidence of an income effect on total time allocation for the children, for work and schooling. Similarly for the study by Ranjan (2002) on Ghana. After solving the problem of endogeneity with poverty, his results showed that poverty is not an important or significant determinant of child labour for the country as a whole.

Another aspect of income is the dimension of wealth. Reproductive tasks, such as housework, cooking, shopping, care for children, sick, and elderly household members, are essential to sustain families. The time requisite for these activities is usually positively correlated with the poverty level of households (Barnett and Whiteside 2002), because household technologies like access to basic services such as electricity and pipe borne water in the household is assumed to make household chores less time-consuming (Guarcello, et al.,). Therefore, lack of such services, infers more time spent on household chores.

2.4.5 Household composition and Time Allocation

Family size and composition also influences time spent by children in market and non-market activities. Studies usually consider the use of birth order, sibling sex composition, or birth spacing in analyzing its effect on a child's welfare (Ilahi, 2001). It is expected that a household with more substitutability than complementarity will increase the hours of time the child spends on household chores. Having more adults should imply more working hands as against having more younger siblings which implies increase in child care (Patrinos and Psacharopoulos, 1997). With regard to the gender of their siblings, girls with more brothers implies substitutability because sons generally spend less time on housework (Morduch, 2000). The presence of younger children under five also implies substitutability as older children take up the responsibilities of household work (Cockburn and Dostie, 2007). Substitutability creates an enormous burden on the child with tendencies of interrupting school time.

A study by Wahba (1998) using maximum likelihood logit estimation proved that the number of children less than six years in the households exerts a negative effect of schooling participation of their older siblings. Also, the presence of younger siblings had a significant negative effect on girls schooling as they are placed in charge of child care. Similarly the presence of younger siblings decreased the probability of paid employment for girls whiles increasing the probability for boys (Webbink et al., 2010).

Lloyd (1994) study found similar results which is linked to the child quality/quantity theory. He analyzed the impact of household size on children's time use in general in the Philippines. His results showed that a larger household size reduced the investment of parents in education of children and therefore increases the likelihood that children will engage in market work. Thus, high fertility rate among the poor, which in turn leads to a high dependency burden among poor families will likely result in higher incidence of child labour. In addition, the probability of not going to school and working is positively and significantly related to the number of children aged 0 to 9 years. These findings also support other theories beyond child quality/quantity theory. Rosenzweig (1997) suggests that especially for girls their schooling is likely to be affected as they are likely to be placed in charge of child care to give their mothers the opportunity to engage in the labour force.

2.4.6 Gender and Time Allocation

Panjwani (2005) in his study on analyzing the key variable in achieving universal primary education highlights the opportunity costs of time the household faces. Based on empirical

evidence from studies, his study indicated that girls were more likely than boys to be affected by the combined effect of poverty and gender concerns. Studies have highlighted that girls face a higher opportunity cost of time than boys. Involvement in domestic chores and used as substitute labour for mother's labour happens to be the key reason for gender differences in human capital investments. Furthermore, the unitary model of household production posits a unitary decision maker which is the parent. However the parent's decision depends upon the value they place on children's activities (Edmonds, 2008). This Edmonds (2008) further justified on theoretical grounds that a higher marginal cost or benefits accrued from a child's time in activities is independent of a specific activity. That is, if a parent places value or rather its current standard of living depends upon a child's involvement in home production (domestic chores), then that child will be allocated to the domestic chore activity.

Similarly Rosenzweig (1997) posits that mothers and daughters work are substitutes. Whiles mothers are involved in the labour force, older daughters may stay at home to take care of younger siblings. Also Levision and Moe (1998) indicated that the amount of time mothers devote to household chores reduces as their children grow, especially girls. Lyon et al (2013) also find out that there exists a strong link between a girl's involvement in excessive chores and early marriage. Perhaps this could justify in part why households view boys as economic assets and willing to invest in boys for future benefits and girls as non-economic assets and as such households not stimulated to invest in them since they are expected to grow up into housewives. That is, their current benefit or contribution to current standard of living might outweigh the future benefit, hence why a unitary decision maker might want to act on the current value to the home's standard of living by making decisions that breed that early contribution rather than future benefits.

Another study by Emerson and Souza (2007) confirms the parental preferences or differences in how additional schooling affects boy's and girl's acquisition of human capital. Using probit model on an extensive survey dataset for Brazilian households, their results showed that gender bias affects the decisions of mothers and fathers to send their son and daughter to school. Similarly Nielsen (1998) analyzed child labour and schooling in Zambia using a bivariate Probit model. A gender gap was established, as boys were found to more likely to attend school than girls.

Most studies have attributed to girl's work more to the household whiles boys to economic activities (Levision et al, 2005; Ilahi 2001). However there are exceptions like that of Webbink et al (2010) study. Using multilevel regression analysis on 16 African and Asian countries, they analyzed the hidden forms of child labour; house work and family business work which according to them seem neglected in developing countries. Their study found a rather surprising fact that boys spend more time on housework than girls. However he attributed this to ownership of land or cattle. That is, boys spend more on time on housework when households possess own land and cattle. Similarly Brobbey (2011) in a qualitative study for Ghana posits that fetching water and firewood are genderless activities. This was confirmed in a quantitative study by Nankhumi et al (2004) for Malawi. Their study aimed at investigating the effect of children's time spent collecting firewood on schooling participation. Results showed that children in deforested areas of Malawi spent significantly more time collecting wood for fuel than children in less deforested areas. The resultant effect was a reduced schooling participation. They went further to confirm the gender impact, in which they found no gender differences in time spent fetching firewood, and this translated into a parallel effect for boys and girls schooling attendance.

When it comes to the boys, they are more likely to participate in the labour force than girls, although a few studies have observed the contrary. For example, Okpukpara and Odurukew (2006) analyzed the determinants of a child working in Nigeria and its implication for poverty reduction using the Nigeria child labour survey. Having employed a multinomial logit technique, their results showed that boys are more likely than girls to participate in market activities. However a contradictory result stems from Canagarajah and Coulombe's (1998) study for Ghana. Using bivariate probit, they analyzed child labour and schooling outcome using the 1998 Ghana Living Standard Survey. An evidence of gender gap was established in schooling outcome but not working outcome. Boys were more likely than girls to attend school whilst boys and girls had the same probability to participate in the labour market. A study for Ghana by Blunch and Verner (2000) established contrary results. Using the 1997 Core Welfare Indicators Questionnaire to estimate a probit model, they rather showed that girls were about four percent more likely to work in the labour force than boys.

2.4.7 Female headed households and Time Allocation

The effect of female headship of the home is unclear, *a priori*, for the reason that, there are two sides in analyzing the effect of female headed households on children's welfare. The first angle posits that mothers invest more resources on their children's human capital. Reasons being that when mothers are empowered they are likely to exert more effort into pursuing a good education for their children (Huisman and Smith 2009). Whilst the second perspective posits that families

headed by women are more often poor and if they are single mother households there is a greater demand for child care for pre-school aged children by older siblings.

Wahba (1998) indicates that female headed households have a higher dependency ratio. A study by Bhalotra and Heady (2003) for Ghana and Pakistan revealed that in rural Pakistan, children from female headed households were more likely to work on the farm. Ranjan (2003) study also support this claim that children in female headed households and in households with low level of education tend to perform worse than other children. Bhalotra and Heady (1998) considered the effect of female headed households and girl's work and schooling in the rural part of Ghana. Results affirmed that child labour was more prevalent and the rate of school attendance lower in female headed households. These studies seem to affirm that as a result of poverty existing in the households women's dependency ratio increased. Thus children are used as household security to supplement income.

Also the other side of the angle supports the claim that women were more likely to invest in their children. A study by Whaba (1998) having used a maximum likelihood estimation technique, results showed that children from female headed households were 4% more likely to have attended school in which Canagarajah and Coulombe (1998) established a similar result.

2.5 Domestic Chores and School Attendance

Most studies published before 2000 (except a few, in the likes of Patrinos and Psacharopoulos (1997) and Levision and Moe, (1998)) excluded the time use of children in domestic activities. (Edmonds, 2008). However, many recent papers are increasingly shifting study focus to activities that occur within the household. A possible explanation for this, can be inferred from Krueger and Tjornhom's (2005) modelling. They posit that the weightiness in child Ban laws, may perhaps explain the decline in children's involvement in paid work. However as children's involvement in paid work is declining there is a tendency for child labour to shift to the household sector (both a combination of children's involvement in family enterprise and domestic chores). Some studies have analyzed both market and domestic work (Guarcello et al, 2008; Levison et al 2005; Assad et Al 2009), others have focused on domestic work solely (Levision and Moe 1998; Nankhumi et al 2004). Ilahi (2001) emphasizes on the relevance of studying this time use distinctively as it will help inform policy makers on the several sides of child labour.

There exist a lot of methodological issues in analyzing the effect of hours worked by children on schooling attendance. This is mainly because time spent on working and schooling are not necessary interdependent (Bhalotra and Heady, 2003). This fact has led to studies focusing more on the participation of children in these activities because analyzing the participation gives the researcher the opportunity to explore techniques that capture the interdependency of time. As a result, most studies employed a bivariate probit model (Coulombe, 1998; Canagarajah, 1998; Nielsen, 1998) whiles others have used a multinomial logit approach (Levison et al. 2001 and Zapata et al. 2006). Others have used ordered probit models (Sakellariou and Lall, 1997;

Cartwright, 1996; Cartwright and Patrinos, 1997), in which they have assumed that parents and children always rank order household decision making process in a specified way.

In all of these studies there has been an attempt to capture independency of time use which captures the participation of children in work activities and schooling as dependent variables. However these studies have been limited to the use of discrete variables. In other words, these studies focused on whether the child engaged in the activities or not, as opposed to how much time they spent on these activities. There is a vital difference in a child's decision to work and the time the child puts into that work. In most literature on child labour, emphasis is put on the explanation of the participation or to a certain extent the relations between the decisions to work and/or to be sent to school (Whaba 1998; Patrinos and Psacharopoulos, 1997; Nyarko 2013). However, there is a dearth of studies in the literature for the actual time (hours worked) in the activities.

Levison et al. (2001) and Zapata et al. (2006) relied on just the participation of children in these activities (schooling and working). As a result, both studies estimated multinomial logit regressions and bivariate Probit regressions. However, results from Levision et al. (2001) study for Mexico showed that excluding domestic work in the definition of work underestimated its effect on girls schooling. Similarly, Zapata et al. (2007) used the bivariate Probit regressions technique to capture both work and schooling as dependent variable. The definition of work in their study was divided into two: a child aged 7 to 14 working in the market and total work which was defined as a child aged 7-14 involved in market and domestic activities. Their results showed that, having factored in just involvement in market activities, girls and boys were more likely to attend school but as the concept of total work (which comprises of both market and domestic

activities) was introduced, girls were more likely than boys to be working. These studies focused on whether children engage in activities or not, as opposed to how much time they spent on these activities.

In their study, (Lyon et al 2013) they admitted to schooling attendance and working as not mutually exclusive but treated both variables as dependent instead of interdependent. They also admitted to their study side stepping the selection bias that accrue from using data on a child's labour force participation and schooling attendance. According to this study, the focus was on the relationship that exists between work hours and school hours and not the effect of working hours on schooling. Having admitted to all the short fall in their study, their results showed that excluding domestic chores from consideration as child labour understates a girl's involvement in child labour. However involvement in domestic chores and paid work faces time constraints and therefore involvement in such is likely to affect a child's schooling attendance.

Guarcello et al. (2008) studied the impact of child labour on a child's ability to enter and remain in school. Their result showed that child labour made it difficult for children to derive educational benefit once in the system. However the results from their study also proved that the negative effects to schooling survival were not limited to economic activity (wages) but also to household chores (domestic production). Nevertheless they indicated that such direct inference of the effect of child labour on educational benefit ought to be taken with caution as their analysis only relied on the use of kernel regression technique. In other words, their inferences relied on a non-linear relation that exists between child labour and schooling attainment. This only captured the correlation not the effects.

Levison et al (2005) attempted to capture the effects by using two sets of instruments to replace a child's time in market and domestic activities. The demand for market work in the locality in which the child lives and the demand for domestic work (that is household access to basic services) were the two instruments adopted. Children classified as child labourers in their study were seen to have worked for at least 14 hours per week in the labour force and/or on subsistence production and/or on domestic tasks. Although the instruments according to Levision et al (2005) was assumed weak, their results however showed that lower rates of school attendance for Egyptian girls were caused by a substantial burden of household work, whiles market work caused a serious impediment to schooling for boys. Assad et al (2009) also investigated the effects of child work hours on schooling for Egyptian children between the ages of 10-14 using joint Tobit and Probit models. For girls, work included time spent on household chores and subsistence activities. Substantial negative effects on attendance were observed above about 10 hours per week for girls and 14 hours for boys.

Levison and Zibani (2010) investigated the effect of girls' work on their school attendance using bivariate normal distribution. Evidence presented showed that the substantial burden of girls' domestic work led to lower rates of school attendance. Insights from the work showed that Policies that attempt to ban labor force work of children will have practically no effect on girls' education in Egypt, while interventions reducing the drudgery of household labour through, for example, improved water and sanitation infrastructure, had better prospects for success.

Working and schooling are not mutually exclusive for children (Patrinois and Psacharopolous 1997; Ravallion and Wodon 2001). However there exists an inverse strong correlation that exists between schooling and working. Nevertheless, because of this strong correlation studies have introduced instrumental variables to capture a child's work (Harmon and Walker 1997). Also another method employed by studies is simulation method. This method identifies key characteristics and behaviours amongst two effects then uses these key characteristics to show concluding real effects of alternative conditions or courses of actions. Studies have identified that schooling and work have opposite responses. In other words factors that tend to increase child labour will tend to decrease a child's schooling participation and as such focused on economic factors, demographic and contextual factors that influence both child labour and schooling. The simulation method does not try to parametrize the pathway through which participation in one activity affects the other. Examples of such studies include the following:

Levision and Moe (1998) established the relationship between household chores and schooling attendance by relying on both the determinant of hours spent in chores for girls in Peru and hours spent in school. The analysis carried out using the 1985-86 Peru Living Standard Survey (PLSS) data on hours spent in paid work, unpaid work, household chores, and school employed the Heckman regressions to correct for selection bias. Result showed that girls in better living conditions with more educated mothers spent fewer hours doing chores and more hours in school. Girls with more preschool-age siblings performed more chores and spent lesser time in school, although this effect on chores can be countered by the presence of other girls and women with whom they apparently share household tasks. Furthermore, a mother's presence reduced school hours substantially and increased the likelihood of enrollment. Their study adopted the simulation

method and this is confirmed through opposite responses from factors that influence both schooling and working. From their results, it was confirmed that preschool-age siblings showed a positive response on chores whiles a negative response on schooling. Inferring from their analysis, as a girl child reduced her hours on domestic chores, her hours spent in school increased.

Whaba (1998) conducted a study for Egypt using the Logit technique and estimated separate regressions for the likelihood of a child participating in paid employment and the likelihood of a child working (waged and non-waged). Results showed that child labour increases with age whiles school participation decreases with age. Also high parental educational attainment increases the probability of a child attending school and also reducing the probability of a child being involved in child labour. All these studies attempted to conduct simulation studies in which they established that what increases the likelihood of a child being a labourer reduces the likelihood of schooling. Hence they make the assertions that child labour is a major factor that impedes schooling.

Similarly, using three rounds of Brazilian household surveys, Kruger et al (2007) made an inference of a girl's work on her schooling. They employed a generalized ordered logit model for both definitions of work: market work only, and total work that includes household chores. Their results showed that girls were more likely than boys to attend school. However as household chores (a component of the total work incorporated into the study) was introduced, girls were more likely to work and less likely to attend school.

Nankhumi et al (2004) investigated the effect of natural resource collection (that is children between the ages of 6-14 involved in fuel wood and water collection activities) and children's schooling in Malawi using two stage conditional maximum estimation technique. Results based on the 1997-98 Malawian integrated household survey (HIS) data showed that children are significantly involved in resource collection work and their probability of attending school decreases with increases in hours spent on the work.

2.6 Ghana Child Labour Studies

Boozer and Suri (2001) conducted a study for Ghana. Their interests was to establish whether a tradeoff existed between hours worked and going to school. In establishing the tradeoff they used the month by region variation in child labour intensities as a source of exogenous variation in child Labour. Having employed a panel approach from a survey data they collected for a period of 11 months, results showed that an hour of child labour reduced school attendance by approximately 0.38 hours.

A study by Ranjan (2003) used the 1998/99 Ghana Living Standards Survey data. His objectives were to ascertain the determinants of child labour excluding household chores. He employed a two-step Heckman technique to correct for sample selection bias that emanates from using hours on labour force participation. Results showed that education and location of residence were amongst factors that influenced children's work. However an area of policy interest is the tradeoff

that exists between child labour and schooling in which his study sought to unravel. Using a 3SLS method that captures hours schooling, hours on working and poverty, results showed that an extra hour spent on paid work led to a child losing out on schooling by 0.26 hours a year.

In analyzing the determinants of child labour in Ghana, Blunch and Verner (2001) relied on the predicted mean probabilities. Having employed a univariate probit model, results showed that children resident in the rural setting are more likely to be involved in child labour than those in the urban setting. However the gender differences, suggest that child labour involvement is more pronounced for girls than boys.

Heady (2003) also focused on the activities of children outside of household on a child's learning achievements. Using the test administered to children on reading and mathematics, results indicate a negative effect of children's work in economic activities on education. However its link emanates from exhaustion from work or diversion of interests away from academic concerns. Nonetheless Heady (2003) admitted to the little attention paid to other opportunity cost of school: the role of household work, in which he admitted to wages from child labour being on the forefront of studies in Ghana.

Further narrowing it down to Ghana's perspective, Nyarko (2013), using dataset from 2006 Multiple Indicator Cluster Survey on children aged 12-14 years and employing binary logistic regression models examined the effect of child labour on school attendance in Ghana. His study relied on a dichotomous dataset which means his study focused on the relationship that exists

between child labour and schooling attendance. His results showed that child labour whether economic or domestic had a substantial effect on children's school attendance after other socio-economic and demographic factors were controlled for. His study failed in capturing or correcting the mutually exclusivity of time use.

On the other hand Vuri (2007) using Ghana Living Standard Survey 1998-99 (GLSS) and the Guatemalan Living Standards Measurement Survey 2000 (ENCOVI) showed that increased and easy access to school had a well-defined impact on children's time use on both economic and household chores. In Ghana the availability and the travel distance from schools (both primary and middle) in the community influence children's work in both economic activities and household chores and school attendance. In sum, the causes and consequences of child labour emanating from children's involvement in market activities have received the most attention.

2.7 Conclusion

The chapter opened with a theoretical literature review on the theory of home production as argued by Becker (1965). The theory is summarized into agency, incentives and constraints. Incentives is basically the opportunity cost involved in current consumption over future benefits, whereas the agency refers to the employers, that is, the parents. Parents or caregivers children's time allocation hence the resultant issue of excessive time use on activities that breeds early contribution from the child rather than future benefits. A household may be compelled by poverty constraints to send a child to work. When these are binding, the opportunity cost of schooling becomes too high. These three factors though different but interact with each other. Literature was empirically reviewed on

the various factors that influence a child's decision to work and school. The methodological issues surrounding hours on work and its effects on school attendance were analyzed. Empirically, not much attention is paid to household sector work in Ghana. Children's involvement in domestic chores is assumed to be detrimental to a child's welfare and a dearth literature exists for Ghana. Hence this study seeks to bridge this gap in the literature.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the methodology of the study. It begins by discussing the theoretical framework. Next is specification of the empirical model, description and justification of variables. The chapter concludes with a description of the data.

3.2 Theoretical Framework

The study adopts the theoretical model suggested by Cigno and Rosati (2005) in assessing the determinants of the time use of children. The model makes a simple assumption comprising of parents and a child. However, for the purpose of this study parents are defined to include any individual who is responsible for the primary care of a child. The child is assumed to live for two periods; 1) the child's youth – when time allocations are decided by parents, and 2) the child's future. The model suggests that the current allocation of a child's time has implications on the future outcomes of the child.

The model assumes that parental utility depends on current consumption and the future of the child's subject to how the child allocates its time today.

The utility depiction of parental or caregivers preference is specified as

$C_k.u(L, C_k)$ ..... (1)

Where

C_k = Child's future

L = Current living standard

However, the child's time is allocated between education *E*, leisure and play *P*, work outside of the household *M*, and work inside of the household *N*. Also, every individual is limited to a time of 24 hours in a day. Normalizing the total time available in a day to 1, the child's time allocation is specified as:

$$E + P + M + N = 1 \quad \text{..... (2)}$$

$$E \geq 0, P \geq 0, M \geq 0, N \geq 0$$

A child's time allocated to activities in the household may be spent either on the production of goods and services for the market or household consumption. Domestic work requires converting purchased inputs into a standard of living.

The standard of living of the household is produced by a linear homogeneous production function specified as

$$N, L = F(X, N) \quad \text{..... (3)}$$

Where N is the time spent on work inside the household and X is the purchased market goods, whiles L is the standard of living. According to Becker (1965), the household maximizes its utility (which results in the standard of living) through consumption of commodities that are produced by combining inputs of time $(N)$and market goods(X).

Human capital accumulation is assumed to be the positive way of transferring resources for children's future consumption. Therefore, the child's future welfare depends on the positive, diminishing marginal product production function, and this is specified as

$$Ck = R\,(E, P) \quad \text{..... (4)}$$

Leisure and play is likely complementary to schooling in the production of child welfare (Ck). A child's welfare might be affected by direct and indirect costs. The opportunity cost of a child not enrolled in school is forgone future consumption of the household in terms of child quality. Households incur a direct cost, *e*, for enrolling the child in school. Thus, the opportunity cost for enrolling a child in school is the foregone current consumption as a result of schooling costs. The direct costs are assumed to be increasing in the time spent in education, E. Thus, the cost accruing to schooling is equal to *eE*. A child can engage in work outside the formal labour market and earn an exogenous wage *w*. Parents are assumed to earn an exogenous income of *Y*. Market goods are purchased from parental and child income in the production of household's standard of living. The current consumption of the household is represented as

$$c = Y + wM - eE \quad \text{..... (5)}$$

The optimal time allocations of the child are obtained from maximizing parental utility subject to the time constraints of the child.

$$Max_{E,P,M,N}\, u(F(Y + wM - eE), R(E, P)) \quad \text{..... (6)}$$

Subject to $E + P + M + N = 1 E \geq 0, P \geq 0, M \geq 0, N \geq 0$

The utility maximization problem yields the following results:

If the child is not enrolled in school $E = 0$. Then

$$\frac{\partial u}{\partial C_k}\frac{\partial R}{\partial E} \leq \lambda + \frac{\partial u}{\partial S}\frac{\partial F}{\partial C}\, e \quad \text{.....} \quad (7)$$

Equation 7 implies that the family's marginal utility from a loss in current consumption as a result of direct costs (*e*) on schooling in addition to the marginal utility of time (λ) is at least as large as the family's utility from future consumption if the child is sent to school. The marginal utility of time is influenced by how the family values the future contribution of child welfare. Parents decide how the child spends their time and as such if the parent's marginal utility of the standard of living emanates from a child's time spent in wage market then that parent will allocate to that activity. However if its marginal utility emanates from a child's involvement in household production then that parent will allocate its child's time to the household chores. This result is consistent with Edmonds (2008), who postulates that the time spent in the wage market and in household production influences the standard of living and as such "there is no reason to why the wage contribution is more likely to dominate schooling than the household production contribution". In fact, Levision et al (2005) suggests that work in the household is less compatible with schooling. This implies that, for most children, the benefit the family derives from a child's time in household production is at least as large as the value the family places on the child's wage contribution.

$$\frac{\partial u}{\partial C_k}\frac{\partial R}{\partial E} \leq \frac{\partial u}{\partial S}\frac{\partial F}{\partial C}\,(w + e) \quad \text{.....} \quad (8)$$

This implies that the marginal utility from the child's input to the family's marginal utility (through wage income and the lack of educational expenditure) is at least as large as the marginal utility from the return to education. Hence parents or caregivers allocate a child's time based on their influences in which the parental influence depends largely on their educational level, household income, and other parental and household characteristics.

3.3 Empirical Estimation Approach

Three empirical estimations will be conducted to answer the three objectives outlined in chapter one. It is worth noting that time use studies are assumed to be interdependent. That is, time spent on several activities are not mutually exclusive, the hours spent on one activity will affect the hours spent on other activities. So far Bivariate Probit model, multinonmial logit, two stage least squares, three stage least squares have all been used by studies to capture the interdependency of time (Canagarajah and Coulombe 1997; Bhalotra 2002). Also these techniques have failed to capture the selection bias problem that arises from a population study. As a result, sample selection model is most appropriate for considering the hours the child spends on activities. Hence this study is using predicted time spent on domestic chores and time spent on market activities to capture its effect on school attendance.

In achieving objectives (2) and (3) which are the determinants of children's involvement in market activities and the effect of involvement in work activities on school attendance, Heckman two-step model will be employed. In the GLSS6 dataset, access to labour force and class attendance information exist for those who are enrolled and employed. Since this population of children are selected non-randomly from the population, estimating the determinants of children's involvement in labour force and class attendance from the sub-population who work and go to school may introduce biases. Heckman two step model offers a means of correcting for non-randomly selected samples. In other words, since only a small fraction of children work, modeling their labour supply raises issues of sample selection. Bhalotra and Tzannatos (2003) admitted that a number of studies have ignored this problem of sample selection.

3.3.1 Determinants of Domestic time use of children

To achieve the first objective, the study estimates an OLS model explaining the factors that influence the domestic hours worked by a child. Factors that influence the hours worked include the locality of residence, children's age, gender, living arrangements of a child, educational attainment of household head, composition of households, etc. The justification for using OLS lies on the data satisfaction of the properties of the OLS. The independent variables do not suffer from the problem of multicollinearity. The multicollinearity results are shown in the Appendix. This implies that the OLS results are consistent and unbiased.

Thus the OLS regression model is specified as:

$$N* = \beta_1 + \beta_2 Childx + \beta_3\ hholdx + \beta_4\ hhDx + \beta_5\ hhEx + e_i \qquad (9)$$

- $N*$ = Hours worked on domestic chores
- $Childx =$ Child characteristics which include age, age squared, gender and residential status
- $hholdx =$ Household head characteristics which includes educational attainment of household head, marital status, age and gender
- $hhDx =$ Household demographics which include household composition.
- $hhEx =$ Household economic characteristics which include income in quintiles, electricity connection, distance to water source, and locality.
- e_i =The error term and this is assumed to have a normal distribution.

3.3.2 Determinants of Market time use of children

This study aims to estimate a Heckman model explaining the factors that influence the labour force hours worked by a child. The sample consists of *N* observations, meanwhile the variable of interest is observed only for *n* <*N*. This implies that using the observed *n* <*N* will distort the true values of the population. In other words, not all children participate in the labour force hence modeling their labour supply raises issues of sample selection. Therefore, Heckman model corrects for potential selectivity effect in which using the Ordinary Least Square (OLS) analysis may produce biased estimates of the true population parameters.

The empirical model to be used in this study is adapted from the work of Bhalotra and Tzannatos (2003). Clearly, Heckman equation is expressed in terms of a latent variable Z_i*which depends on one or more explanatory variables.

$$Z_i = \gamma_1 + \gamma_2 w_i + u_i i = 1, \dots, N \qquad (10)$$

$$Z_i = \begin{cases} 1 & Z_i* > 0 \\ 0 & otherwise \end{cases}$$

$Z_i* > 0$ implies positive hours of work. For this study estimating the positive hours of work in the labour force would require selecting from those employed. Hence the issue of biasedness. Therefore, sample-selection correction methods is estimated. The Heckit procedure starts by estimating a Probit model of a child's labour force participation. The explanatory variables are the child's age, gender, income in quintiles, composition of households and locality.

Heckman is a two- step estimate, first the participation is estimated using Probit

Therefore Probit is estimated and specified as:

$$M = \alpha_1 + \alpha_2 Childx + \alpha_3\ hhDx + \alpha_3\ hhEx + e_i \qquad (11)$$

- $Childx$ =Child characteristics include that age and gender
- $hhDx$ = Household demographics which include household composition.
- $hhEx$ = Household economic characteristics which include income in quintiles and locality.
- e_i = The error term and this is assumed to have a joint distribution

The inverse mills ratio is obtained as

$$\lambda = IMR = \frac{\phi(\alpha_1 + \alpha_2 Childx + \alpha_3\ hhDx + \alpha_3\ hhEx)}{\Phi(\alpha_1 + \alpha_2 Childx + \alpha_3\ hhDx + \alpha_3\ hhEx)}$$

Where, ϕ denotes the standard normal probability density function, and Φ denotes the cumulative distribution function for a standard normal random variable. The value of λ *(*inverse mills ratio*)* is obtained from the Probit model in equation (11) based on the observed binary outcome M. Afterwards, the inverse mills ratio is included in a least squares regression (equation 12 below) as an additional variable to correct for self-selection. Thus the hours worked (M*) in labour force by a child using the ordinary least squares is specified as:

$$M* = \alpha_1 + \alpha_2 Childx + \alpha_2\ hholdx + \alpha_3\ hhDx + \alpha_4\ hhEx + \alpha_\lambda inversemills + e_i. \qquad (12)$$

To justify the usage of Heckit model is dependent on the inverse mills ratio. If the inverse mills ratio is statistically significant then sample selection technique is most appropriate. As a result, the estimated parameters will yield unbiased and consistent results of $\alpha_1, \alpha_2, \alpha_3, \alpha_4$

3.3. 3 Effect of market and non-market time use on school attendance

The third objective is to estimate the effect of children's involvement in domestic chores and the labour market on school attendance. To correct for the possible endogenous nature of time spent on domestic chores and the labour market and the endogeneity bias arising from the interdependence between time spent on work and in school, the study uses predicted values of children's involvement in domestic chores and market activities to examine the effect on school attendance.

Predicted hours on domestic work^ =^$HHchild$ + ^$hhEx$h+^$hhloc$ from (9)

Predicted hours on market work^ =^$HHchild$ + ^$hhEx$h +^$hhloc$ from (11)

For a child to skip classes that child would have to be enrolled first. Hence there is a need to apply the Heckman two step method to correct for underreporting that will results from using OLS.

Thus the Probit is estimated as:

$$S = C_1 + C_2 hholdx + C_3\ hhDx + e_i \quad (13)$$

To generate the inverse mills as:

$$\lambda = IMR = \frac{\phi(C_1 + C_2 Childx + C_3\ hhDx + C_3\ hhEx)}{\Phi(C_1 + C_2 Childx + C_3\ hhDx + C_3\ hhEx)}$$

The inverse mills ratio is added to the OLS regression model:

$$S* = C_1 + C_2\ hholdx + C_3\ hhDx + C_4\ work\hat{} + C_\lambda inversemills + e_i \quad (14)$$

Where S* is the number of times school was missed by a child in a week.

3.4 Data Source

The study uses data from the sixth round of the Ghana Living standards survey conducted in 2012/013 by the Ghana statistical service with support from the World Bank. The survey covered a nationally representative sample of 18,000 households in 1200 enumeration areas, an increase of 800 enumeration areas from the last conducted survey (2005/06). Amongst the household number, 16,772 were interviewed leading to detailed available information on time use, migration, agriculture, non-farm business, poverty status, education, health, employment, demographic characteristics of households, community level characteristics etc. The estimated household population from the survey is 26.3 million, whilst the estimated number of households in the country is 6.6 million with a mean household size of 4.0 compared to 4.4 obtained from the 2010 Population and Housing Census.

3.5 Description of Variables

3.5.1 Dependent Variables

Hours on Domestic Chores: is the total time spent on fetching water, firewood, washing clothes, ironing, cleaning, cooking, shopping, running errands, washing dishes, elderly care, sick care, schoolwork help and child care in a week. Hours on domestic chores is selected for children between the ages of 5 to 17.

Hours on Market Work: A child is said to engage in market work if the child did any work for pay, profit, family gain or produced anything for barter. Information on a child's time spent on market work is recorded for individuals between the ages of 5-17.

Hours on classes missed: A child is said to have missed classes if the child skipped class during the last seven days prior to the survey. Information on classes missed is recorded for individuals between the ages of 5 to 17.

3.5.2 *Definition of Independent Variables*

The choice of the independent variables is guided by the findings from existing literature and the purpose of the study.

3.5.2.1 Child Characteristics

- **Gender of the Child**

A child's involvement in domestic chores depends on demographic factors. One main factor that distinguishes the activities of the market sector from the household sector is the gender factor. Most cultural setting is such that it necessitates many societies to take greater control of girls time use than boys making time use highly gendered: Boys in the market sector whiles girls in the household sector (Levision et al 2005; Ilahi 2001). Perhaps household do differentiate in gender, boys seen as economic asset and girls as non-economic assets. This could explain differences in

schooling outcomes between boys and girls. This study expects boys to work more hours than girls in the labour force, whiles girls working more hours than boys in the household.

- **Age of the Child**

Also it is expected that as a child increases in age then more responsibilities ought to be bestowed on a child for future responsibilities (Patrinos and Psacharopoulos, 1997). The child works more and as a result faces the possibility of affecting schooling regularity amongst other factors. Age of a child refers to the age measured in years. The United Nations Convention on the Rights of the Child classified every person under the age of 18 years as a child but traditional definitions place a child at about 15 or less. However this study will adopt the United Nations' as well as the children's Act 1998 definition of a child, which is below 18.

- **Living arrangements of a child**

This variable would be grouped into the four main living arrangements sects in Ghana, "both parents", "father only", "mother only", "fostered". There are suppositions that a father's absence infers more time involvement of a male child in the market sector and more time involvement of a female child in the household sector. However a mother's absence trickle down its household responsibilities to a daughter (Rosenzweig, 1977) whiles more involvement of boys in the market sector. This is attributed to gender theory that assigns men to income producing roles and women to unproductive roles as a result, presence of a father would fill income lapses filled by a male child vice versa for a mother's presence.

Also it is expected that a fostered child spends more time working than non- fostered child (Fafchamps and Wahba, 2006). Some analysts have linked this to non-genetic connections that exist between a fostered child and the caregiver hence inferred a lesser altruism from the caregiver to the child. However Anker (2000) indicates it has more to do with caregiver's value to work and education and not based on lesser altruism. However this study cannot determine whether the caregiver is altruistic or not because the data does not reveal whether the biological and non-biological child resides in the same household under the same living conditions and supervisions. Nevertheless one would expect fostered children to spend more time working and skipping classes.

3.5.2.2 Household Head Characteristics

- **Gender of the Head of Household (HHGEN)**

Gender of the Head of Household indicates whether the household is headed by a male or a female. This study expects children in a male headed household to work less since men are generally assumed to play the income producing roles vice versa for women all other thing being equal. This is also a measure of household insecurity.

- **Educational Status of Household Head**

Educational attainment is a categorical variable. Educational attainment is grouped into six main categories and they are: Individuals with no education is assigned 0 point, Basic Education which consists of primary and junior secondary education is assigned 1 point, Secondary Education is assigned 2 points, Other levels of Education which consists of vocational, commercial, technical, is assigned 3 points whiles teacher training and professional qualification is assigned 4 points and finally Tertiary Education which consists of polytechnic and university qualification is assigned 5 points.

Educational level of the head of household appears to be another important correlate of children's work. Child's work is most common in households with low level of educated agents (Guarcello et al 2004). Parents who received some level of education appreciate the value of schooling and its possible returns and will therefore be more driven to engage their children in schooling as against non-schooling activities. Education, which is the key component of human capital, is constructed in this study. A negative effect is expected on children's work and a positive effect on school attendance.

3.5.2.3 Household Demographic Characteristics

- **Household Composition** consists of children between the ages of 0-4, girls between 5-14 years, girls between the ages of 15 to 17, boys between the ages of 5 to 14, boys between the ages of 15-17, women between the ages of 18-19, women in the age of 50 and above, men between the ages of18-49and men in the age range of 50 above.

When it comes to the household sector, household composition is viewed from the angle of complementarity and substitutability (Ilahi, 2001). Substitutability implies the child bears the burden of work whether household or market sector. Whiles complementarity implies the tasks is shared which reduces the hours and burden. However this study expects that a child residing in a household with more adults should imply more working hands and reducing the hours spent on working as against having younger siblings which implies increase in child care (Patrinos and Psacharopoulos, 1997). With regard to the gender of their siblings, girls with more brothers implies substitutability because sons generally spend less time on housework (Morduch, 2000). The presence of younger children under five also implies substitutability as older children take up the responsibilities of household work and labour force work (Cockburn and Dostie, 2007). Substitutability creates an enormous burden on the child with tendencies of interrupting school time.

3.5.2.4 Household Economic Factor

- **Household Income in Quintiles**.

The effect of income on children's time use is undetermined. Grootaert (1998) affirmed an endogeneity issue from the child's income to the adult's income, which might affect the parameters and the significance level. This variable would be grouped into four income quintiles in Ghana, "lowest", "second", "third", "fourth", "highest".

Another aspect of income is the dimension of wealth. Reproductive tasks, such as housework, cooking, shopping, care for children, sick, and elderly household members and paid work are

essential to sustain families. The time requisite for these activities is usually positively correlated with the poverty level of households (Barnett and Whiteside 2002). The poverty levels of households are correlated with household technologies. Household technologies like connection to basic services, (like electricity and pipe borne water) existent in the household is assumed to reduce hours on work (Guarcello, et al., 2004). A household which spends more time on these activities is assumed to be lacking income. Electricity connection in the households is a dummy while's distance to water is a continuous variable. Therefore this study expects electricity connections and distance to water source effect to be negative and positive respectively. Becker's (1965) theory stipulates that time use in the household is dependent on household technologies. Household technologies like fridge, stove, microwave etc. reduces the time the child spends on domestic chores. Therefore the study expects the presence of these technologies to reduce the time spent on domestic chores.

- **Locality of the child**

This is included in the study to control for differences in demographic characteristics that may affect a child's hours on work whether domestic or market work and classes skipped. Location is divided into two main categories: Whether the person lives in an urban or rural area. It is expected that children residing in the rural areas are likely to work more hours in the labour market and household sector and more likely to skip classes compared to their urban counterpart, all other thing being equal. Location is a categorical variable where 1 equals rural and 0 urban

3.6 Conclusion

This chapter discussed the theoretical framework underpinning the study and subsequently develops the models that will be estimated by the study. The chapter further highlighted the empirical model, the variables, the data source and the description of the data used in the study have been thoroughly described in this chapter

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

The chapter presents and discusses the results of the econometric estimations of this study. The chapter is divided into five sections. Section 4.2 focuses on the descriptive statistics of the variables used. Section 4.3 focuses on the determinants of children's involvement in domestic chores. Section 4.4 discusses the determinants of children's participation in market activities. Finally, section 4.5 focuses on the effect of children's involvement on market activities and domestic chores on school attendance. All the analyses are carried out using STATA version 13 (Stata Corp, 2011).

4.2 Descriptive Statistics for the dependent variable and independent variable

Table 2 below provides the descriptive statistics of the categorical and continuous variables employed by the study for children aged 5-17 years.

Table 2 Descriptive statistics

Variable	Obs	Mean	Std. Dev.
Missed	19874	27.8600	43.0420
Market Activities	24372	6.0377	12.8758
Domestic Activities	24372	6.4952	8.3773
Age	24372	10.7483	3.6549
Distance to Water Source	24372	0.3192	0.9982

Variable	Proportion	Std. Err.	[95% Conf.
Gender of the child			
Male	0.5093	0.0032026	0.5029759
Female	0.4907	0.0032026	0.4844702
Residential Status of the child			
Both parents	0.6077	0.0031279	0.6016006
Father only	0.0432142	0.0013027	0.0407317
Mother only	0.1819674	0.0024717	0.1771728
Fostered	0.1670702	0.0023898	0.1624384
Household Gender			
Female	0.2352772	0.0027174	0.2299928
Male	0.7647228	0.0027174	0.7593549
Location			
Rural	0.6477203	0.0030602	0.6416991
Urban	0.3522797	0.0030602	0.3463051
Educational attainment of Household Head			
No Education	0.4121968	0.0031534	0.4060302
Basic Education	0.4671482	0.0031962	0.4608889
Secondary	0.0515451	0.0014165	0.0488384
vocational/technical/commercial	0.0187959	0.00087	0.0171644
Teacher/Nursing/post	0.0316822	0.0011221	0.0295552
Degree or higher	0.0186318	0.0008663	0.0170076
Access to Electricity	0.540354	0.003194	0.5340875
Yes	0.459646	0.003194	0.4533922
No			
Income Quintiles			
Lowest	0.249846	0.0027746	0.2444472
Second	0.2122643	0.0026207	0.207173
Third	0.1885653	0.0025069	0.1837006
Fourth	0.177681	0.0024498	0.1729301
Highest	0.1716433	0.0024166	0.1669583

Source*: Constructed from 2014 GLSS6 dataset*

From Table 2 for the continuous variables, the mean hours of classes missed by a child is 29 hours in a week. In terms of work participation, an average child spends about 5 hours on market activities in a week. Whereas an average child spends about 6 hours on domestic chores. The mean age is 10.75 years.

For categorical variables, 51% are males whiles 49% are females. In terms of the living arrangements of a child or residential status of a child, 61% live with both parents, 4% live with only father, 18% live with mother only and 17% are fostered. With regards to the gender of the household head, 76% are male headed households whilst 24% are female headed households. The educational attainment of a household head varies in different categorical proportions. Forty one percent of household head had with no form of education, 47% had basic education, 5% had secondary, 2% had vocational/technical/ commercial trainings, 3% are teachers/ nurses and 2% had a degree or higher form of education. With regards to the location of the child, 65% are in the rural areas whilst 35% in the urban areas.

4.3 Determinants of Children's Involvement in Domestic Chores

Table.3 presents the results of the OLS regression estimating the determinants of children's time involvement in domestic chores. The results are presented for the full sample of children in addition to estimations for subsamples of boys and girls. The dependent variable is the total time spent on domestic chores on all activities in a week.

Table 3 Determinants of Children's Time Spent in Domestic Chores

Explanatory variables	Full Sample	Boys Only	Girls Only
Age	1.6302***	1.2814***	1.9727***
Age Squared	-0.03289***	-0.0335***	-0.0306***
Gender			
Male (Ref Cat)			
Female	4.0509***		
Living Arrangement of the Child			
Both Parents (Ref Cat.)			
Father only	0.2715	0.5284**	0.1677
Mother	-0.0308	0.0401	-0.0865
Fostered	1.0271***	0.7482***	1.2607***
Location of Household			
Urban (Ref. Cat.)			
Rural	1.2544***	0.9847***	1.6660***
Educational Attainment			
No Education (Ref. Cat.)			
Basic Education	-0.5427***	0.0953	-1.2425***
Secondary	-0.5927***	-0.0561	-1.3463***
Voc./Tech/Comm.	-1.1802***	0.1718	-2.6563***
Teacher/Nursing/Post	-0.4430	-0.0981	-0.9536**
Degree or Higher	-1.7791***	-1.0237*	-2.5984***
Gender of Household Head			
Female (Ref. Cat.)			
Male	0.58100***	0.4526*	0.7569**
Household Income in Quintiles			
Lowest (Ref. cat.)			
Second	-0.2914	-0.3347	-0.3113
Third	-0.0308	0.1776	-0.2332
Fourth	0.0250	0.0643	-0.0034
Highest	-0.0773	0.0280	-0.2884
Electricity			
No (Ref. cat)			
Yes	-1.0382***	-0.5795***	-1.6130***
Distance to Water source	0.2416**	0.1612*	0.3028**
HHold Demographic X'tics			
Children 0 to 4	0.3457***	0.1340*	0.5597***
Girls 5 to 14	-0.3413***	-0.2838***	-0.1582
Girls 15 to 17	-0.2204	-0.4424***	-1.0661***
Boys 5 to 14	0.0812	-0.1614**	0.1004
Boys 15 to 17	-1.12467***	-0.4560***	-0.7309***
Women 18 to 49	-0.5958***	-0.2893***	-0.9034***
Women 50	0.1612	0.0687	0.2703
Men 18 to 49	-0.1933**	-0.2735	-0.1358

Men 50	-.3901**	-0.3964**	-0.3792
Number of Observation	24342	12389	11953
F >Prob	0.0000	0.0000	0.0000
R-squared	0.2300	0.1238	0.2565
Root MSE	7.3545	5.821	8.4343

*** significant at 1% level, ** significant at 5% and * significant at 10%
Source: Constructed from 2014 GLSS6 dataset

The characteristics of the child in terms of age and gender significantly influences the likelihood of involvement in domestic chores. The coefficient for age and age squared are statistically significant. The fact that the coefficient of age is positive and significant and that of age squared is negative and significant means that the time spent on domestic chores first increased with the age of the child and at some threshold age level the domestic time use then decreases. Using Table 3 column 2 results for the full sample and taking derivatives with respect to age and equating to zero, the threshold level age turns out to be approximately 24.8 years. A possible explanation could be that as children grow, they may leave the home to participate in market work or for schooling purposes. Another possibility emanates from having more substitutability or more helping hands to decrease workload (Levision et al, 2005).

The results suggest a significant gender effect on children's time participation on domestic chores. Girls spend more hours on domestic chores than boys. Being a girl increases the likelihood of the time spent on domestic chores in a week by 4 hours. This is consistent with Levision et al (2005) study. According to their study, household responsibilities are mostly borne by females. This is necessitated on cultural grounds, in that a girl's time use is propelled into roles that seem compulsory for development and future benefits in marriage. As a result, time use of children is

very gendered. Boys tend to engage more in the market work whilst girls are required to partake in household production (Levision et al 2005; Ilahi 2001).

The living arrangement of a child influences the hourly contributions to domestic chores per week. Fostered children spend more time on domestic chores compared to children living with both parents, in the full sample as well as sub-samples for boys and girls. Being a fostered child is likely to increase the weekly time contribution of a child to domestic chores by 1 hour. This finding is consistent with studies that claim that children particularly girls are fostered so as to relieve household's own children from domestic activities to pursue educational opportunities (Ainsworth, 1996; Akresh, 2009; Kèmèlè et al 2010).They argue that households foster children to satisfy a domestic demand for child labour. In addition they found that non- biological children are more likely to work longer hours than biological children within the household. This result is also line with Bhalotra and Heady (2000) who found that sons of the head of household worked less.

A boy residing with his father is likely to spend more time on domestic chores compared to children residing with both parents. This is significant at 5% level. An explanation for this could be inferred from gender role theory. The theory asserts that women spend substantial time on housework than men, especially in African setting where women are socialized to bear the burden of household chores. It is expected that children living with just fathers will spend more time on chores than both parents.

Children who reside in the rural areas are more likely to be involved in more hours of work on domestic chores each week than children in the urban areas. However a girl residing in the rural areas faces the likelihood of increasing her weekly time on domestic chores by about 2 hours. Whiles for a boy in the rural areas the weekly increase is by an hour. These results are significant. The infrastructural gaps exist between rural and urban areas may explain the locational differences between children's time use on domestic chores. World Bank (1999) indicates that fetching firewood and water are time consuming activities. These activities are usually pervasive in the rural areas than in the urban areas.

In terms of educational attainment of the head of the household, the results indicate that generally, any form of education is likely to reduce a child's total hours spent on domestic chores. It implies that as the head of household increases in educational level, hours spent on domestic chores by a child reduces. These results are consistent for the full sample of children and the subsamples of girls. Guarcello (2004) provides evidence to support the hypothesis that higher education attainment of the household head decreases the time spent by children on domestic chores. This result may be due to the fact that educated household heads are more likely to reduce the domestic burden on children so as to enable the children to engage in after school learning activities. These results may also be attributed to the fact the educational attainment of the household head may reflect their wages. Such heads of households may be able to afford substitutes for child's time input in domestic chores. The results for the subsample of boys generally depict an insignificant results except for degree or higher level of head of household's educational attainment that indicates an indirect effect on hours spent on domestic chores. This is line with Emerson and Souza (2003) study for Brazil in which she found that educational attainment of the household head

significantly explains the effect on girl's outcomes than boys. Children living in households headed by males are more likely to do at least one extra hours of household chores.

Household income quintiles do not explain children's participation in domestic chores. This is consistent with earlier studies for Ghana (see Boozer and Suri 2001; Ranjan (2003). According to their study results, they found no evidence of an income effect on total time allocation for the children on working. However, other measures of household wealth such as distance to water source and the presence of electricity in the household significantly explain children's time participation in household production. As expected a household with electricity connection reduces the time children spends on domestic chores by an hour more than those without electricity connection. The results of the subsamples reveal that the presence of electricity connection in the household reduces time spent on domestic chores by 2 hours for girls and an hour for boys. Whilst a longer distance to water source increases time spent on domestic chores for less than an hour. Similarly for a girl, her increase is by 2 hours and an hour. Thus, these results are consistent with Guarcello, et al. (2004). They inferred that presence of household technologies like connection to basic services, (like electricity and pipe borne water) makes household chores less time-consuming and labour intensive. Therefore deprivation of such services, may require additional time to be spent on household chores by children. For instance, the absence of a refrigerator to preserve food, could mean that cooking must be done daily, and children may be responsible for the extra shopping).

The demographic composition of households exerts significant influences on children's time use. The presence of children between the ages of 0-4 significantly explains an increases in time spent

on domestic chores by older children. A unit increase in the numbers of a younger child is likely to increase the time an older child spends on domestic chores in a week by 0.3 hour. This is consistent with Cockburn and Dostie, (2007). They report that the presence of younger children under five years implies a household demand for child labour services as older children takes up responsibilities for child care. This result further suggest substitution between adults' and children's domestic time use.

Similarly, the presence of women between the ages of 18-49 significantly exert a negative effect on the time a child spends on domestic chores. Also girls between the ages of 5 to 14 shows a significant negative effect on time spent in domestic chores whilst for boys within the same age categories showed a significant positive effect. This is consistent Patrinos and Psacharopoulos (1997) study. According to their study, a household with more substitutability than complementarity will increase the hours of time the child spends on household chores. With regard to the composition of the households in gender, girls with more brothers implies substitutability because sons generally spend less time on housework. The opposite is expected to be vice versa. A unit increase in the number of adults between ages 18-49 reduces the time a child spends on domestic chores by an hour. However this effect is stronger for girls than for boys. The presence of more adults in the household implies the availability of working hands as against having younger siblings implies an increase in child care responsibilities (Patrinos and Psacharopoulos, 1997).

4.4 Determinants of Children's Time Spent on Market Activities.

Table 4 reports the estimates of the Heckman Two-Stage Sample Selection regression examining the determinants of children's time spent on labour market activities. The determinants have been classified under demographic and socio economic variables. Key variables that affect this phenomenon, according literature are (1) education levels of household head, (2) household income, and (3) residential status (or living arrangement) of the child.

The estimates were derived using a two-step procedure of Heckman model for three different samples: the full sample of households in Ghana, and gender disintegrated (boys and girls). The statistical significance at 1 percent level of the inverse mills ratio for the full sample suggests appropriateness of using Heckman two-step procedure to arrest the problem of selectivity bias from under reporting that would have resulted from the adoption of OLS procedures. This is true for all sub –samples.

Table 4: Determinants of Children's Time Spent on Labour Market Activities.

Explanatory variables	Full Sample	Boys Only	Girls Only
Child characteristics			
Age	7.4423***	7.3476***	-2.708***
Age Squared	-0.2042***	-0.1994***	0.1450***
Gender			
Male (Ref Cat)			
Female	-1.2066***		
Living Arrangement of the Child			
Both Parents (Ref Cat.)			
Father only	1.9617***	2.9869***	0.2410
Mother	0.5677	0.9232*	3.0646
Fostered	6.6963***	7.2235***	2.9907
Household Head Characteristics			
Educational Attainment			
No Education (Ref. Cat.)			
Basic Education	-6.668***	-5.4722***	-4.8343***
Secondary	-3.9175**	-4.4272***	-2.3305
Voc./Tech/Comm.	-5.7161**	-9.9655***	-2.1903
Teacher/Nursing/Post	-7.3560***	-5.182***	-6.7702***
Degree or Higher	-2.3283	-8.6871***	0.9039
Gender			
Female	-5.486***	-6.1773***	-3.6899***
Male (Ref. Cat.)			
HHold Demographic X'tics			
Children 0 to 4	0.6961*	1.1580**	0.87187**
Girls 5 to 14	1.0874***	0.5444	0.6344
Girls 15 to 17	0.1079	-0.1666	-0.4936
Boys 5 to 14	1.4643***	1.5418***	0.3432
Boys 15 to 17	1.4355**	1.6812**	0.6918
Women 18 to 49	-0.0949	0.1072	1.0122**
Women 50	0.2052	0.5448	-0.6248
Men 18 to 49	-0.0987	0.4421	-0.0744
Men 50	0.6099	0.1958	0.4346
Ownership of Household Asset			
Electricity			
No (Ref. Cat.)			
Yes	-7.7565***	-8.6702***	-0.6098

Distance to Water Source	1.8863***	2.2532***	0.1451
Income in Quintile			
Lowest (Ref. Cat.)			
Second	2.0586**	1.3263	-1.1178
Third	2.3330**	1.9977	-2.1141**
Fourth	3.0773***	1.4200	-0.3758
Highest	1.5288	0.1641	-1.7083
Location of Household			
Urban (Ref. Cat.)			
Rural	8.2192***	9.2217***	-2.7965***
Number of Observation	24086	12284	11802
Censored obs	17085	8542	8538
Uncensored obs	7006	3742	3264
Prob> chi2	0.0000	0.0000	0.0000
Mills-Lambda	3.3341***	3.3474***	-0.0927***

*** significant at 1% level, ** significant at 5% and * significant at 10%

There exists a significant positive relationship between the age of the child and the time spent on labour market activities. Using Table 4 column 2 results for the full sample and taking derivatives with respect to age and equating to zero, the threshold level age level turns out to be approximately 18.2 years. However the results of the effect of labour force participation among the boys and girls indicates a different result pattern. The boy's age has a positive effect on involvement in labour market activities whiles a girl's age has a negative effect on labour activities. This is however expected particularly for girls. As she increases in age her labour force participation reduces whilst a boy increases. This analogy points to the fact that boys are more actively involved in the market sector and as they grow their participation increases whereas the girls are found to be actively involved in the household sector, similarly as they grow their participation is more driven towards the household sector (Levision et al 2005). It is shown that a female is less likely to spend time on labour market activities as compared to the male. The male child spends an hour more on labour market activities compared to the females. This result is significant at 1%. This is consistent with

studies that emphasize gender differences in the allocation of children's time use with girls engaged in housework rather than market oriented productions (Levision et al, 2005).

Children who reside in the rural areas are more likely to be involved in about 8 hours on market activities each week than those in the urban areas. While boys in rural areas spend more time in the market sector compared to their urban counterparts, the opposite is the case for girls. A boy in the rural area is likely to spend 2 hours on market activities in a week, whiles a girl residing in rural area is likely to spend 2 hours less on market activities.

The results of the living arrangements of a child suggests that fostered children allocate more hours per week to market oriented activities compared to children living with both parents. This results suggests that household demand for fostered children may be influenced by the desire to supply child labour for market production especially in urban areas. If excessive engagement in market activities are deemed detrimental to child welfare in terms of schooling and health, the effect of the fostering status on child's time participation in market work provides evidence to support the hypothesis that altruism to child welfare decreases with weaken biological relationships (Andvig et al, 2001). However for fostered girls, their involvement in labour market activity is insignificant. This reason could be inferred from Ainsworth's (1996) and Apt's (2005) claims. According to study, fostered girls are significantly less likely to engage in a market activity but rather home keeping activities, whereas a fostered boy is more likely to engage in market activities. Results indicate that a fostered boy is likely to spend as much as 7 hours on labour market activities more

than children living with both parents. Meanwhile a boy child living with his father and mother is less likely to spend that amount of time. These results are significant and consistent with Moehling (2004) study. According to his study, he established that children living apart from one or both parents is connected with greater market work participation.

From the empirical estimates, children residing in households headed by women spend less time in market activities compared to children residing in male headed households. This negative relationship varies across the full sample, boy's sup-sample and girl's rural sub- sample. A household headed by a female is likely to reduce the time the child spends on a paid job by 5 hours per week for the full sample. This is contrary to theory that postulates that a child living in a female headed household, increases its time spent on the labour market. This result is contrary to Rickey's (2009) study. His study suggests that owning to differences in incomes between men and women, children residing in female headed households are more likely to engage in market work to supplement household income. However the results from this study is consistent with Patrinos and Psacharopoulos (1995). Rubalcava, Teruel, and Thomas (2009) inferred that women are more concerned about the future of their children and hence more likely to make future investments towards schooling than working.

The evidence of household income on a child's time allocation to market production is positive and significant except for the last quintile. This is consistent with Bhalotra and Heady (2003) study for Ghana and Pakistan. Their results refutes the claims that child labour emerges from the poorest households. According to his study, using land as an asset to measure income found out that children work more in households with more land acres. That is, rich kids are more likely to work

especially in family oriented market productions and services. This study results shows that as income in quintile increases, children's participation in labour market increases.

Another aspect of income is the dimension of wealth, in which electricity and water source availability have been used as proxies to measure wealth hence income. Levision and Moe (1998) admit to it been a weak measure of household wealth because it measures more of community resources. In spite of this, this study seeks to ascertain its effect. A household with electricity connection in the rural areas shows a likely reduction in the time the child spends on domestic chores by 8 hours. However for the sub-sample, electricity connection and its effect on labour market activities is only significantly explained in the boy's sample. This is significant at 1%.

There exists significant relationships between the education of the household head and a child's time spent in the labour market. A similar result cuts across the sub-samples. Some form of educational attainment of the household head decreases time spent on market activities. This results is consistent with the evidence from child labour studies that suggest that educated household heads are concerned with improving the school progression opportunities of resident children and such discourage children from engaging excessively in market activities.

4.5 Effect of economic and domestic time use on school attendance

Unlike grade attainment and repetition, school attendance or classes missed can be directly linked to the time use of a child. The hours of classes missed may have severe consequences on grade attainment, performance and repetition. Table 5 reports the results of the Heckman Two-Stage Sample Selection regression examining the determinants of the hours of classes missed per week. Of particular interest is the effect on children's time involvement in domestic and market activities on the hours of classes missed per week. The study used the predicted values of domestic and market activities on hours of classes missed per week. The estimates were derived using a two-step procedure of Heckman model for three different samples: the full sample of households in Ghana and regional disintegration (rural and urban). Heckman two step procedure was selected to ensure consistency by preventing the problem of selectively bias from underreporting that would have resulted from the adoption of OLS procedures. The significance of the inverse Mills ratio of the Heckman Two-Stage procedure suggest that estimating the determinants of the hours of classes missed by the Ordinary Least Squares procedures will have led to sample selection bias.

Table 5: Effect of Children's Involvement in Work activities on Hours of Classes Missed per Week

Explanatory variables	Full Sample	Urban	Rural
Time use on Market activities			
predicted domestic activities	0.0943	-0.0771	0.1939
Predicted market activities	0.2938**	0.2131*	0.3316**
Residential Status			
Both Parents (Ref Cat.)			
Father only	-5.2057*	-8.8880***	1.1069**
Mother	1.4126	-2.2545	0.4532
Fostered	-1.0542	-3.9742*	1.5622***
Household Head Characteristics			
Educational Attainment			
No Education (Ref. Cat.)			
Basic Education	2.3914*	-1.7099	-0.2488
Secondary	0.9598	-2.2163	-0.4155
Voc./Tech/Comm.	1.4745	-6.4629	-0.8514
Teacher/Nursing/Post	-3.2453	-8.6720***	-0.7768
Degree or Higher	-10.3154***	-14.9635***	-1.0491
Gender			
Male (Ref. Cat.)			
Female	-0.9346	0.2674	0.0138
HHold Demographic X'tics			
Children 0 to 4	-1.1148*	-0.7142	0.3065**
Girls 5 to 10	0.97394**	1.2435	-0.6671***
Girls 11 to 17	-2.3920**	-1.768664	-0.5446***
Boys 5 to 10	1.0118**	-1.4899	0.2193
Boys 11 to 17	-1.6283	-2.2405	-1.1617***
Women 18 to 49	-1.9833***	-1.9911***	-0.7065***
Women 50	-0.1212	-0.3509	0.1729
Men 18 to 49	-0.1212	-0.1274	-0.2845
Men 50	-.695087	-0.6779	-0.39943
Location of Household			
Urban (Ref. Cat.)			
Rural	1.5262		
Number of Observation	23890	8349	15541
Mills-Lambda	1.9135***	2.6914***	1.7638***
Prob > chi2	0.0000	0.0005	0.0000
Censored obs.	4215	1187	3028
Uncensored obs.	19675	7162	12513

*** significant at 1% level, ** significant at 5% and * significant at 10%

Children's time spent on market activities has been found to influence schooling outcomes of children. The results show a positive relationship between the hours of market work per week and the hours of classes missed per week. This positive relationship suggest that school attendance and market participation of children are competing uses of a child's time. Columns 2 and 3 of Table 5 presents the empirical results of the rural and urban subsamples respectively. The results show that an hourly increase in a child's time spent on market job, increases the hours of classes missed per week by 0.33 and 0.21 hours respectively. The magnitude of the effect of market work on school attendance is more pronounced for the sample of children living in the rural areas than those in the urban locations. Usually, children in rural areas are more engaged in agricultural related activities which is time and labour consuming and this explains why their reduction in school participation is more. This is significant and consistent with other studies for Ghana (Bhalotra and Heady 2003; Boozer and Suri 2001; Nyarko 2013).

The results further demonstrate the effect of a child's involvement in domestic activities on school attendance. The results shows a positive relationship between the hours of predicted domestic activities per week and the hours of classes missed in the rural area. However the results for the full sample and sub-samples are insignificant.

From Table 5, and for the full sample, the estimates show that children co-residing with their fathers only reduces the hours of classes missed per week compared to their co-residing with both parents. Estimates from the GLSS6 data extracts shows that children living with their fathers

spends more time in school than fostered children and children living with their mothers. Whilst children residing with their fathers on average miss about 26 hours of classes others residing with both parents and in fosterage arrangement miss about 28 hours of classes per week. These observations may support the theoretical predictions of Webbink's et al (2010) that suggest that the absence of parents reduces the tasks that children may have to perform within the household. This is attributed to gender theory that assigns men to income producing roles and women to unproductive roles as a result, presence of a father would fill income lapses filled by a child and as such more likely to be in school.

Nyarko (2013) suggest that the educational attainment of the caregiver of a child has important implications for school enrolment, performance and progression of the child. Bhalotra and Heady (2003) provides evidence on a positive relationship between the educational attainment of the head of household and the school performance of resident children in Ghana. However, the estimates from the Heckman regression reveal a significant relationship between the education of the head household and the hours of classes missed by a child per week with the exception of secondary education, vocational, teachers and nurses. A household head with basic education negatively influences the hours a child misses from school. This implies that a household head with just basic education is not enough to exert a positive influence on a child's school attendance. However, Table 2 reveals that 47% of household heads holds just a basic educational qualification, a proportion higher than every other form of education. However a household with a degree or higher increased the hours children spend in school. This clearly confirms that educated parents value future benefits over current consumptions, that is they are likely to forgone other things for the

cost of educating their child. Also because they value education, children in such households are likely to enjoy school progressions.

Likewise educational qualification is a significant factor in explaining children's schooling attendance in the urban setting but not in the rural setting. This can be attributed to low educational attainment of household heads in the rural areas. Estimated statistics from GLSS6 data extracts reveal that household heads with higher levels of educational (degree or higher) in the rural areas are about 2% whilst those in the urban areas about 20%. Meanwhile household heads with no level of education in the rural areas are about 21% and in the urban area about 9%. This shows a vast educational attainments amongst household head in different regions but in the same county. This perhaps explains why household head educational attainment is not significant in explaining children's participation in school.

The composition of the households according to studies exerts negative influence on a child's schooling. The presence of younger children implies substitutability as older children take up the responsibilities of work (Cockburn and Dostie, 2007). Substitutability creates an enormous burden on the child with tendencies of interrupting school time. Empirical results confirm this by showing that children in the age range of 5-14 increased the hours of classes missed by an older child. Based on the child quality/quantity theory, it asserts that the presence of younger children exerts negative influence on older children as they are mostly likely to stop schooling to work. However the presence of more adults in the house poses a likelihood of increasing the hours children spend attending school.

4.6 Chapter Summary

This chapter estimated three regressions to answer the three objectives of the study. With regards to the determinants of children's involvement in domestic chores, age, gender, residential status of a child especially been fostered, location, household composition and electricity and distance to water source were most significant in influencing children's participation in domestic chores. Females were found to be more likely to participate in domestic chores as compared with their male counterparts. However factors that lead girls to performing more work include the presence of younger children in the households, being in a rural setting, living in a household where the child is fostered, educational qualification of household head, electricity connected to the house and distance to water source.

The division of household labour amongst gender also revealed that boys spend most of their time on labour market work as compared to their female counterparts. The study went on to reveal the factors that leads to children's participation in labour market; and they include the presence and number of children in the household, being fostered and location of an individual, educational qualification of the household head, age and gender of the child.

On the effect of time use in economic and household duties, only time spent on market activities significantly affect school attendance. Other factors that influence a child's hours in school are the education of the head of household, the child co-residing with the father as well as household composition were other factors.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings of this study upon which conclusions are drawn and recommendations made. Based on these findings, some policy recommendations are proposed to improve school attendance which have the tendency of improving the welfare future outcomes of children in Ghana. The final part of the chapter outlines the limitations of the study and suggests areas for further research.

5.2 Summary of Findings

This study primarily assessed the effect of children's involvement in non-schooling activities (that is children's involvement in domestic chores and labour market) on schooling outcomes. Also, the study sought to analyze the factors that influence children's participation in domestic chores and market activities.

Human capital is crucial to economic growth and development. In response to this, Ghana adopted a free fee educational policy as well as other education intervention programmes like school feeding programme, and cash transfer (Livelihood Empowerment against Poverty (LEAP))

programme, all targeted at the poor and at improving children's enrollment rate and school attendance.

One of the most profound and talked about issue is the competing demand for children's time with schooling by other activities, particularly, market work and domestic chores. A child's excessive involvement in non-schooling activities (economic and non-economic activities) posits a negative impact on the child's development.

Ghana Statistical Service (2014), reveals a high percentage of child labour emanating from children's involvement in market and non- market activities. The report indicates that, for those children who participated in economic activity, 76.4 percent were involved in child labour and 49.7 involved in the worst forms of child labour. However for non- economic activity, the report reveals that for children who participated in household chores, 25.3% of children were involved in child labour or household labour while 16.6 percent in hazardous forms of child labour. Further into how involvement in these activities can affect schooling is gotten from the estimates of the Ghana Living Standard Survey (GLSS 6). The data extracts reveals that about 35% of females claim to have missed classes as a result of involvement in an economic activity whiles 51% of females missed classes for helping out at home. However for the boys, 49% also claim to have missed classes on account of helping out at home.

Ghana Statistical Service (2014) reports reveal a declining trend in children's involvement in economic activities whilst an increasing proportion of children spending excessive hours on

household chores in Ghana. Nonetheless studies on child labour emanating from children's time use in Ghana has been paid little attention to time spent on domestic chores compared to involvement in market activities. This study sought to ascertain the effects of time use in domestic chores on school attendance as well.

The study employed secondary data from GLSS6 dataset to estimate the determinants of time use in domestic and market activities as well as their effect on school attendance. The OLS and Heckman two-step techniques were employed.

Results indicate that boys spend more time on market activities than girls whiles girls spend more time on domestic activities than boys. This result is a confirmation of gender role theory which asserts that females spend substantial time on domestic activities whiles males spend more time on market related ventures. Furthermore, in comparing the living arrangement of children with regards to their work involvement, fostered children are likely to spend more time on domestic chores and market activities compared to children living with both parents. This may suggest that households foster children to satisfy a domestic demand for child labour.

The results provide evidence to support the geographical influence on children's time spent on domestic and market activities. Children who reside in the rural areas are likely to be involved in more hours of domestic and market activities than those in the urban areas. These results suggest that, the infrastructural gaps existing between rural and urban areas may perhaps explain vast time differences on these activities. Fetching water and firewood and agricultural activities are time and

labour consuming which are likely to be more prevalent in the rural locations. As expected a household with electricity connection reduces the time children spends on domestic chores by an hour more than those without electricity connection. The results of the subsamples reveal that the presence of electricity connection in the household reduces the time children spend on domestic chores, whilst a longer distance to water source increases time spent on domestic chores.

In terms of educational attainment of the head of the household, any form of education is likely to reduce a child's total hours spent on domestic chores and market activities. It implies that as the head of household increases in educational level, hours spent on both activities by a child reduces. Contrary to popular views on female headed households and its negative effect on a child's excessive time use on market activities to complement household income. This study showed that children residing in households headed by women spend less time in market activities compared to children residing in male headed households.

The evidence of household income on a child's time allocation to market production is positive and significant except for the last quintile. However as involvement in market activities is characterized mostly by involvement in the agricultural sector, this result suggests that rich kids are likely to work especially in family oriented market productions and services.

The second part of the study examined the consequences of children's involvement in these activities by assessing the determinants of school attendance. The study reveals that children's time spent on market activities significantly influences schooling outcomes. The results show a positive relationship between the hours of market work per week and the hours of classes missed per week. Time spent on domestic chores, however was not significant but showed a positive

relationship between hours of domestic work per week and the hours of classes missed for rural residents only.

The educational attainment of the caregiver of a child has important implications for school enrolment, performance and progression of the child. This study provides evidence on a negative relationship between some form of head of educational attainment and school attendance of children in Ghana. However, the educational attainment of head of household significantly explains children's school attendance in the urban area but not in the rural areas. This may perhaps be as a result of low educational attainment of household heads in the rural areas in comparison to household heads in the urban areas.

5.3 Policy Recommendations

The main conclusions drawn from this study have a number of important implications for policy. First of all, the study reveal that children's time use in economic activities affects school attendance. This goes to the core of child labour. Thus efforts must be made by all stakeholders to reduce the incidence of the excessive involvement of children in both economic and non-economic activities. Poverty is at the core of child labour, thus it might be useful for more social interventions programmes aimed at supporting household incomes to nip child labour in the bud. More educational campaigns on the ills of child labour and the engagement of children in excessive non-economic as well as economic activities to the detriment of their schooling must be stepped up.

The study also reveals that fostered children spend more time on domestic and market activities than those children living with both parents. This suggests that perhaps children are fostered for child labour. Policies have been enacted and cited in studies for improving the welfare of fostered children. A study by Apusigah (2007) brought to light the active involvement of NGOS like UNICEF in monitoring positive child care practices. Also, drawing from this study Djebbari and Mayrand (2011) for children in KwaZulu-Natal (South Africa), children who were fostered and giving an alternative livelihood preferred to be under the guidance and supervisions of their biological parents. As such, policy interventions that limit the movement of children between households may target the reasons why children are fostered in the first place more than the rights and bans on fostering. Also most fostering situations in Ghana and other developing countries find more children been fostered into homes of relatives posing a great challenge to policy makers. However there are existing child fostering laws in Ghana such as the 2007 Foster Care Regulations and the 2010 Standards for Residential Homes. The effectiveness of these laws will depend on checks on the fostered children to ensure their welfare is not endangered. In short, effective policies in Ghana still emanates from the NGOs supports. Another way can be to empower the fostered parents to restrict the movement of children between households

Hidden child labour is indeed prevalent in Ghana, as children help their parents on the family farm or business and in domestic work. However an average Ghanaians visualize images of child labour, a typical image of a child been forced into prostitution, fighting as soldiers or enslaved portray the ideal picture of child labour, but these hideous working conditions are rare. Also, how can working for one's family be considered as tantamount to child labour? Hence these creates serious issues for policy makers. More so, bans on child labour in the real world typically apply only to certain relatively small kinds of child labour, like working for pay in a factory, rather than large categories

like child labourers employed by their parents or children in unpaid domestic work. Identified ways to reduce child labour has been to raise the incentives of schooling through programmes and cash transfers. Policies like Food for Education in Bangladesh and Progresa for Mexico are suggested to be effective in improving schooling enrollment and attendance in these countries Edmonds and Pavcnik (2005). For Ghana, the social grants introduced is the Livelihood Empowerment against Poverty (LEAP) programme, introduced by the Government in 2008. One of its aims is to support poor families and enable children go to school. According to a study by Ofosu (2011) it was also found out that the school feeding programme had positive and significant impact on school enrollment, attendance and retention. Therefore there is a need to invest more on these programmes as it shows a higher success rate in reducing hidden child labour.

To reduce the time children spend on domestic chores and market activities especially in the rural areas where the hours spent is more as compared to the labour market, improving access to water and electricity in the rural areas seems to be the most effective policy instrument that directly affects the hours spent on these activities. Fetching water and firewood at long distances can also be very hazardous and this activity is also more prevalent in the rural areas therefore this study suggests NGOs to target those in the rural with distributions of stoves and fridges to store food especially in communities with electricity connections. However the main problem is the high cost making it impossible for low income earners who need the facilities the most difficult to patronize. According to the University of Mauritius report (2002) employee's welfare fund of the export processing zone made available loans to workers at concessionary rates to enable them buy domestic appliances, this has long proven to save time and reduce burden on children. (Cited in Addati and Cassirer, 2008)

5.4 Limitations of the Study

The key limitation to this study as identified by other studies reviewed in chapter two is the nature of the data. Similar studies have focused on the participation of children only in these work activities and made inferences on the effect of using bivariate Probits and Multinomial logits. In using hours worked some have explored simulation studies, weak instruments, predicted values. Also in using labour market data on school attendance, two problems are created which is a sample selection problem and endogeneity problem. Therefore there is a need to have a strong econometric technique that will both capture selection bias problem and time use as interdependent.

Further, this study was limited in certain judgment on child fostering as the data only captures the residential status of a child. There is no way a researcher can ascertain if a fostered and non-fostered child resides in the same house bound by the same lacks and opportunities.

5.5 Suggestions for Further Research

The time use of children especially in Ghana have received little attention in economic literature. This study provides some preliminary knowledge on its determinants and welfare consequences. On the basis of the study's findings, there are prospects for further research work. Just like Bhalotra and Heady (2003) pointed the relevance of children's involvement in domestic chores being an important study for policy makers yet seem neglected, there is need for more study attention.

However the study focus could go beyond school attendance to analyzing its impact on school performance.

Also studies that examine the welfare outcomes of child labour where child fostering is prevalent should take into account the living arrangement of the child. As this study and other previous works have shown, fostered and non-fostered in a household may be treated differently in terms of investments in human capital accumulation, health and medical care and nutrition. Failure to account for the residential status of children may lead to misleading estimates of the effects of household-level variables on child welfare outcomes. Similarly, economic studies on child labour should consider child labour in a fostering situation.

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APPENDIX

Correlation matrix of coefficients of regress model

e(V)	age	agesq	2.gender	2.reside	3.reside	4.reside	1.rururb	1.hh_educ	2.hh_educ	3.hh_educ	4.hh_educ
age	1.0000										
agesq	-0.9836	1.0000									
2.gender	0.0792	-0.0376	1.0000								
2.reside	-0.0622	0.0476	0.0025	1.0000							
3.reside	-0.0131	0.0084	-0.0180	0.1315	1.0000						
4.reside	-0.0652	0.0506	-0.0413	0.1607	0.4935	1.0000					
1.rururb	-0.0289	0.0232	-0.0206	-0.0040	-0.0287	0.0098	1.0000				
1.hh_educ	-0.0320	0.0219	-0.0940	-0.0156	-0.0610	-0.0541	0.0528	1.0000			
2.hh_educ	-0.0106	0.0036	-0.0230	-0.0071	-0.0431	-0.0605	0.1637	0.4311	1.0000		
3.hh_educ	-0.0052	-0.0030	-0.0433	-0.0192	-0.0351	-0.0281	0.0768	0.2929	0.1940	1.0000	
4.hh_educ	-0.0133	0.0090	-0.0399	-0.0263	-0.0520	-0.0806	0.1036	0.3620	0.2459	0.1664	1.0000
5.hh_educ	-0.0106	0.0054	-0.0405	-0.0160	-0.0242	-0.0219	0.1540	0.3210	0.2282	0.1535	0.2032
distance	0.0065	0.0031	0.0615	-0.0125	-0.0126	-0.0045	-0.1111	0.0157	0.0363	0.0275	0.0312
1.hhgender	0.0288	-0.0235	0.0492	0.0115	0.5979	0.3532	-0.0581	-0.0992	-0.0958	-0.0690	-0.0708
1.electric~y	-0.0275	0.0156	-0.0946	-0.0015	-0.0015	-0.0077	0.3299	-0.1994	-0.1211	-0.1028	-0.1322
children0to4	0.0738	-0.0540	0.0246	0.0201	-0.0119	0.0158	-0.0491	-0.0112	-0.0302	0.0282	-0.0064
girls5to14	0.0270	-0.0041	-0.3254	0.0099	0.0555	-0.0310	-0.0338	0.0554	0.0191	0.0116	0.0236
girls15to17	0.0203	-0.0438	-0.0366	-0.0064	-0.0492	-0.0996	-0.0009	-0.0222	0.0295	-0.0163	-0.0168
boys5to14	-0.0484	0.0810	0.4151	0.0061	0.0155	-0.0298	-0.1056	-0.0354	0.0336	0.0072	-0.0012
boys15to17	0.1544	-0.2033	0.1562	-0.0086	-0.0420	-0.0645	-0.0302	-0.0106	0.0154	0.0151	0.0219
women18to49	-0.1083	0.0924	-0.0851	0.0916	-0.0530	0.0909	0.0644	0.1276	0.0736	0.0257	0.0535
women50	-0.0155	0.0071	0.0278	-0.0172	-0.0787	-0.2951	-0.0320	0.1507	0.1042	0.0547	0.0665
men18to49	-0.0629	0.0539	-0.0124	0.0374	0.0886	0.0665	-0.0715	0.0166	-0.0236	0.0107	-0.0197
men50	-0.0912	0.0751	-0.0565	-0.0113	-0.0413	-0.0101	-0.0071	0.1000	0.0640	0.0304	0.0104
2.quintile	-0.0044	0.0154	0.0154	0.0031	0.0452	0.0511	-0.0265	-0.0987	-0.0491	-0.0064	-0.0080
3.quintile	-0.0216	0.0315	-0.0085	0.0296	0.0571	0.0506	-0.0227	-0.0486	-0.0910	-0.0127	-0.0367
4.quintile	0.0039	0.0020	-0.0322	0.0215	0.0854	0.0915	0.0013	-0.0891	-0.1021	-0.0461	-0.0765
5.quintile	-0.0162	0.0174	-0.0237	0.0341	0.0591	0.0645	-0.0087	-0.1271	-0.1147	-0.0545	-0.1415
_cons	-0.7421	0.7058	-0.1647	-0.0269	-0.3363	-0.1730	-0.1679	-0.1186	-0.0841	-0.0471	-0.0443

e(V)	5.hh_educ	distance	1.hhgender	1.electr~y	childr~4	girls~14	girls~17	boys5~14	boys1~17	women~49	women50
5.hh_educ	1.0000										
distance	0.0122	1.0000									
1.hhgender	-0.0827	-0.0306	1.0000								
1.electric~y	-0.1016	0.0483	0.0009	1.0000							
children0to4	-0.0098	-0.0217	-0.1223	0.0886	1.0000						
girls5to14	0.0416	0.0246	-0.0916	0.0536	-0.1290	1.0000					
girls15to17	-0.0149	-0.0452	0.0337	-0.0110	0.0512	0.0465	1.0000				
boys5to14	0.0262	0.0092	0.0265	-0.0253	-0.1451	-0.0229	-0.0064	1.0000			
boys15to17	0.0106	-0.0346	0.0849	-0.0412	-0.0135	-0.1649	0.1871	0.1148	1.0000		
women18to49	0.0617	-0.0159	-0.0022	-0.0555	-0.1567	-0.1939	-0.1614	-0.2100	-0.0912	1.0000	
women50	0.0534	-0.0286	0.1917	-0.0669	0.0099	-0.1244	0.0626	-0.0545	0.0672	0.1634	1.0000
men18to49	-0.0025	-0.0005	-0.2943	-0.0179	0.0734	0.0534	-0.1030	-0.0847	-0.1452	-0.0276	-0.0916
men50	0.0419	0.0065	-0.4272	0.0488	0.1312	0.1003	-0.0631	-0.0700	-0.1885	-0.0697	-0.2962
2.quintile	-0.0118	0.0638	-0.0311	-0.0247	0.0632	0.0398	-0.0421	0.0147	-0.0835	-0.1216	-0.1230
3.quintile	-0.0160	-0.0177	-0.0412	-0.0659	0.0432	0.0645	-0.0537	-0.0031	-0.0602	-0.0770	-0.0712
4.quintile	-0.0849	-0.0045	-0.0315	-0.0892	0.0332	-0.0189	-0.0415	-0.0366	-0.0711	-0.0818	-0.0989
5.quintile	-0.1845	0.0055	-0.0395	-0.0380	0.0356	-0.0213	-0.0307	-0.0675	-0.0715	-0.1128	-0.0778
_cons	-0.0609	-0.0454	-0.3421	-0.1568	-0.1238	-0.1007	-0.0218	-0.0983	-0.1047	-0.0282	-0.0824

e(V)	men18~49	men50	2.quintile	3.quintile	4.quintile	5.quintile	_cons
men18to49	1.0000						
men50	0.3306	1.0000					
2.quintile	0.0399	-0.0137	1.0000				
3.quintile	0.0459	-0.0502	0.4757	1.0000			
4.quintile	-0.0166	-0.0391	0.4872	0.4742	1.0000		
5.quintile	-0.0589	-0.0405	0.4875	0.4684	0.5147	1.0000	
_cons	-0.0149	0.1171	-0.1624	-0.1410	-0.1233	-0.0795	1.0000

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Appendix B: Determinants of Children's Time Spent on Domestic Chores: Full Sample, Gender Sample, Gender Sample and Location Sample

Explanatory variables	Full Sample	Boys Only	Girls Only	Urban	Rural
Children Characteristics					
Age	3.8564***	2.9258***	4.6898***	3.4294***	4.0371***
Age Squared	-0.1162***	-0.0940***	-0.1352***	-0.1026***	-0.1211***
Gender					
Male (Ref Cat)					
Female	4.8886***			3.6019***	5.6598***
Residential Status of a Child					
Both Parents (Ref Cat.)					
Father only	0.6891*	1.0430**	0.2819	-0.0721	1.1069**
Mother	0.4992	0.5571	0.3233	0.5608	0.4532
Fostered	1.6666***	1.3386***	1.9361***	1.8185	1.5622***
Household Head Characteristics					
Educational Attainment					
No Education (Ref. Cat.)					
Basic Education	-0.1982	0.6994***	-1.2322***	-0.1496	-0.2488
Secondary	-0.5580	0.1638	-1.3865**	-0.6345	-0.4155
Voc./Tech/Comm.	-1.1633**	0.3136	-2.5154***	-0.9847	-0.8514
Teacher/Nursing/Post	-0.2845	0.2574	-0.8892	-0.1423	-0.7768
Degree or Higher	-2.5375***	-1.4843**	-3.2583***	-2.5857***	-1.0491
Gender					
Female (Ref. Cat.)					
Male	0.4023	0.2302	0.5212	0.8348*	0.0138
Age	0.0074	0.0265**	-0.0153	0.0111	0.0033
Marital Status					
Never Married (Ref. Cat.)					
Married or Consensual Union	1.1981**	0.3182	1.7370**	0.5623	1.3248
Separated/Divorced/Widowed	0.4333	-0.6304	1.1818	-0.2126	0.6531
Income in Quintiles					
Lowest (Ref. cat.)					
Second	0.0992	-0.0979	0.3446	0.3454	0.0431
Third	0.3842	0.3904	0.4614	1.0328**	0.0712
Fourth	0.5506**	0.3395	0.7773**	1.0120***	0.3394

Highest	0.5443*	0.5682*	0.4742	0.7517*	0.5255
Ownership of Assets					
Fridge					
N0 (Ref. cat)	-0.2458	-0.2605	-0.2532	-0.2107	-0.2500
Yes					
Stove					
No (Ref. cat)	-0.3921	0.0155	-0.7895**	-0.1350	-0.6673
Yes					
Electricity					
No (Ref. cat)	-1.1898***	-0.6234***	-1.7896***	-1.9383***	-0.9816***
Yes	0.1493	0.0723	0.2153	0.3485	0.1043
Distance to Water source					
HHold Demographic X'tics					
Children 0 to 4	0.3784***	0.2109*	0.5860***	0.7218***	0.3065**
Girls 5 to 10	-0.6283***	-0.4643***	-0.1942	-0.4885**	-0.6671***
Girls 11 to 17	-0.4756***	-0.7248***	-0.8518***	-0.2986*	-0.5446***
Boys 5 to 10	0.2874**	-0.2420*	0.2398	0.5391***	0.2193
Boys 11 to 17	-0.9908***	-0.6072***	-0.7706***	-0.5894***	-1.1617***
Women 18 to 49	-0.7118***	-0.3426**	-1.0780***	-0.6250***	-0.7065***
Women 50	-0.5241*	-0.02102	0.35299	0.1289	0.1729
Men 18 to 49	-0.2338*	-0.3777*	-0.0445	-0.1088	-0.2845
Men 50	-0.5241*	-0.6640**	-0.3053	-0.6104*	-0.39943
Cultural Characteristics					
Location of Household					
Urban (Ref. Cat.)					
Rural	1.7201***	1.2521***	2.1134***		
F stat	130.01***	47.22***	89.57***	50.37***	88.16***