UNIVERSITY OF CAPE COAST

EFFECT OF REMITTANCES ON CHILD WELFARE IN GHANA

BY

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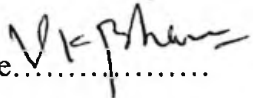
DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this University or elsewhere.

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Supervisors' Declaration

We hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis as laid down by the University of Cape Coast.

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ABSTRACT

This thesis investigates the effect of migrant remittances on child welfare in Ghana. The specific objectives are to examine: (1) the effect of remittances and gender on child labour; (2) the effect of remittances on child welfare clinic attendance and (3) the effect of remittances on child education in Ghana. Using the Ghana Living Standards Survey (GLSS) Round 6, the study employs the instrumental variable 2SLS approach in order to achieve the first and third objectives. This approach is adopted in order to address the endogeneity of remittances. To achieve the second objective, the study uses the Poisson regression model. The study finds evidence that irrespective of whoever is the head of the household, remittances income is inversely related to child labour. However, the negative effect is much higher for male-headed households than it is for female-headed households. Furthermore, remittances have a positive and significant effect on child welfare clinic attendance thereby improving child health. Finally, the result indicates that remittances have a positive and significant influence on child education. Based on these findings, it is recommended that the Bank of Ghana should facilitate the establishment of more mobile money transfer outlets and reduce the transactions cost of remittance so as to enable households improve child welfare. Furthermore, the government should provide incentives to attract more remittances sent to female-headed households in order to enhance their negative impact on child labour.

KEYWORDS

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DEDICATION

To my wife, Hajia Sadiatu and my children, Abdul-Nazzer and Sherif

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LIST OF ACRONYMS

CHPS   Community-Based Health Planning and Services

COTVET   Council for Technical and Vocational Education and Training

ERP   Economic Recovery Programme

ESACP   Education Sector Adjustment Credit Programme

FCUBE   Free Compulsory Universal Basic Education

GBE   General Board of Education

GCLMS   Ghana Child Labour Monitoring System

GDHS   Ghana Demographic and Health Survey

GIMPA   Ghana Institute of Public Administration

GLSS   Ghana Living Standards Survey

GSS   Ghana Statistical Service

ILO   International Labour Organisation

IMF   International Monetary Fund

IRR   Incidence Rate Ratio

IV   Instrumental Variable

IYCF   Infant and Young Children Feeding

JHS   Junior High School

JSS   Junior Secondary School

MOESS   Ministry of Education, Science and Sports

NHIS   National Health Insurance Scheme

UNICEF   United Nations International Children Emergency Fund

UNESCO   United Nations Educational and Scientific Co-operation

CHAPTER ONE

INTRODUCTION

In recent times, the development impact of migrant remittances has spawned various discussions in the economics literature. Whilst some researchers have mainly investigated the determinants of remittances (Carling, 2008; Hager-Zanker & Siegel, 2007; Lucas & Stark, 1985; Piracha & Saraogi, 2011), others have explored the impact of these remittances on household welfare (Cuong, 2009; Giang & Pfau, 2009; Quartey, 2006;).

In spite of the increase in the inflow of remittances in developing countries, much remains to be learnt about their child welfare impacts. Welfare in this study refers to a state of good health and the presence of conditions required for reasonably comfortable and secure living by the individual. Thus, this thesis extends the discussion on migrant remittances by investigating for Ghana, the effects of remittances income on child welfare using data from the Ghana Living Standards Survey Round 6. The child welfare indicators in the study include child labour, child welfare clinic attendance and child education. The academic and public interest in issues relating to the improvement of child welfare makes the focus of this thesis particularly relevant.

Background to the Study

Remittances have increasingly become an important source of income in many developing countries. This development has come about as a result of the increase in both internal and international migration worldwide, technological advancement and the sudden increase in money transfer outlets (World Bank, 2013). Sander (2003) defines remittances as monies sent from

one individual or household to another. International remittances are those sent by migrant workers who left their home country. On the other hand, internal (domestic) remittances are those sent by migrant workers who left their home village or town to work elsewhere in their home country (e.g. rural-urban migration).

Remittance flows to developing countries are substantial yet highly underreported due to weak data recording mechanisms and high levels of informal flows stemming partly from service gaps in the formal money transfer sector (Sander & Maimbo, 2005). The World Bank estimates that remittances to developing countries amounted to about US$429 billion in 2016 (World Bank, 2017).

In Africa, international remittances sent to families back home reached nearly US$40 billion in 2010, equivalent to 2.6 % of Africa's gross domestic product (GDP) (Mohapatra & Ratha, 2011) and according to the World Bank (2017), US$34bn was remitted to Sub-Saharan Africa (SSA) in 2016. The data on African migration and remittance flows, however, are likely to be understated because of the scale of undocumented migration within the African continent, the prevalence of informal remittance channels within the region, and the relatively weak official data in many African countries (World Bank 2006).

In Ghana, the World Bank figures on migration and remittances, show an increase in international remittances from US$31 million in 1999 to US$2,100 million in 2016 (World Bank, 2016). The increase in international remittances to Ghana could be attributed to the liberalization of the foreign exchange market and the proliferation of money transfer institutions.

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According to Quartey (2006), there are different transfer mechanisms available to migrants to send remittances to Ghana, namely, banks, credit unions, small and large money transfer institutions such as Western Union, MoneyGram and VIGO, hand delivery by the sender through a third party and other informal channels.

However, the choice of the method of transfer depends on several factors such as the amount sent, the legal status of the migrant, the cost of sending money through the legal channels, the existence of social networks or clubs, government regulations regarding the transfer of money, to mention but a few. Prior to the liberalization of the financial sector in Ghana, the informal financial sector served as the major means through which remittances have been sent. However, the liberalization of the financial sector has made the informal sector less attractive since migrants try to balance higher transactions costs of remitting money with lower risk (Quartey, 2006). In other words, most migrants prefer to pay interest and remit money through formal channels to using the informal channels which are associated with high risk.

Overall, the gains from both internal and international remittances to households in Ghana over the years cannot be over-emphasized (Quartey, 2006). What is, however, not clear is whether the flow of these remittances leads to an improvement in the welfare of children in the households.

Generally, migrant remittances relax income constraints and allow households to invest in human capital development. In other words, remittances received from migrants provide an opportunity to relax household liquidity constraints in accessing economic opportunities and to improve child welfare- which may have otherwise, not been affordable. Thus, remittances

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may help the family to reach a subsistence level and, hence, make child labour unnecessary (Basu & Van, 1998). In fact, the additional income received in the form of remittances may also help in improving child health (through child welfare clinic attendance) and child education.

Issues relating to remittances and migration are intertwined, as migration decisions give rise to the provision of remittances. Thus, while remittances can benefit households by lifting liquidity constraints, migration of a family member may have disruptive effects on family life and a negative effect on child welfare. Studies have shown that the absence of one parent can lead to disruptive effects on the household structure and imposes an economic burden on the remaining household members (Hanson & Woodruff, 2003; Coon, 2016). The migration of a parent can lead to short-term losses in income, including the need to repay debt incurred to fund a migration trip, and can fracture the nuclear family through infidelity and/or the migrant's abandonment of his/her family (Frank & Wildsmith, 2005) leading to the long-term loss of household income.

Also, the absence of adult supervision resulting from an increase in the migration of adults can negatively affect the educational guidance provided to the child and as a result, lower his educational achievement (Halpern-Manners, 2011). Again, the absence of a parent due to migration is also likely to have consequences on children's psycho-social development and their performance at school, with some consequences on their participation in economic activities (Edwards & Ureta, 2003; Bansak & Chezum, 2009). These children left behind face significant stress at an early age and this could irreversibly damage the child-parent attachment. Children are also required to

undertake household chores that the absent migrant formerly performed and also work to fill the short term income deficit in the family. Furthermore, children are required to engage in market activities to replace the migrant's former contributions to household income, thereby reducing school attendance and performance. Thus, the child's wellbeing is compromised if he/she works rather than attends school.

If the welfare of children left behind is compromised, they may not only fail to reach their potential, but they may also become an economic and social burden. According to the International Labour Organisation (ILO) (2013), in 2012, there were approximately 168 million children in the world who were caught in child labour, with 85 million in hazardous work. In 2010, the largest number of child labourers was in the Asia-Pacific region (77.7 million), followed by Sub-Saharan Africa (59 million) and Latin America and the Caribbean (12.5 million) (ILO, 2013).

With respect to child health, approximately 165 million children under five years old worldwide, are growth stunted, 101 million are underweight, and 52 million are experiencing wasting syndrome (Das, Salam, & Bhutta, 2016).

On the global scale, the education of children is also under threat due to high levels of poverty in some communities. Sub-Saharan Africa remains the region with the highest out-of-school rates for all age groups. The global education monitoring report by UNESCO for July 2016 has shown that of the 61 million out-of-school children of primary school age, about 33 million, live in sub-Saharan Africa. These child welfare indicators are undoubtedly, a worrying situation.

At the aggregate level, research on migrant remittances (Yang, 2008; Demurger & Xu, 2011) finds that remittances lead to an improvement in household welfare, giving almost no attention to their direct impact on the human capital development of children left behind. However, the causal impact of remittances on child welfare needs more investigation at least for two reasons. Firstly, the impact is not simply equal to the amount of remittances received. Secondly, even if remittances lead to a substantial increase in household income, there is no guarantee that they will result in similar increases in child welfare outcomes.

Again, literature (e.g. Binci & Gianelli, 2012; Lopez-Ekra, Aghazarm, Kotter & Mollard, 2011) suggests that, from the point of view of children left behind, the gender of the head of household matters in taking household decisions and remittances are especially important in female-headed households (Carling, 2005). Thus, differences in the gender of the household head undoubtedly influence the use and impact of remittances (Ramirez, Dominguez, Morais, Ramirez & de Pou, 2005). For instance, the decision by the household to send children to work may depend largely on the gender of the household head. Unfortunately, however, the gender perspective of the effect of remittances on child labour has been less explored, providing at best tentative guide for public policy initiatives.

Statement of the Problem

Researchers and policy makers have become increasingly interested in the effect of remittances on the welfare of household members left behind in developing countries (de Brauw & Rozelle, 2008; Yang, 2008; Demurger & Xu, 2011). While a number of studies have indicated that remittances can

benefit left behind household members by increasing household income, relatively little sustained academic scholarship addresses the effect and implications of migrant remittances on children left behind and in the Ghanaian case, such studies are almost non-existent.

Given the magnitude and pervasiveness of remittance income, for many households, decision relating to child welfare will be affected by remittance flows. Thus, this study seeks to investigate the effect of remittances on child labour, child welfare clinic attendance and child education in Ghana. The decision to choose these indicators among other indicators such as child nutrition and child mortality is based on the following reasons. (i) According to the Ghana Statistical Service (2014), out of a population of 6,972,718 children aged 5-14 years, 24.7% are working and 21.2% are into child labour. (ii) Data from the 2003 Ghana Demographic and Health Survey (GDHS) suggests that one in every nine Ghanaian children dies before reaching age five. (iii) The 2010 population and housing census report that nearly 623,500 children of primary school age are still not enrolled in primary school and one out of four children in the kindergarten age range are not in preschool (GSS, 2012). Against this backdrop, this study seeks to investigate the extent to which remittances income affects child labour, child welfare clinic attendance and child education in Ghana.

Previous research on remittances has left many questions unanswered. For instance, many studies on the effect of remittances on child labour (Bargain & Boutin, 2014; Binci & Giannelli, 2012; Nguyen & Nguyen, 2013) tend to ignore the gender dimension of child labour. With migrant remittances, shifts in income sources are likely to affect intra-household decision making,

which suggests potential gender dimensions in the impacts on child labour (Nguyen & Purnamasari, 2011). Thus, any generalisation concerning the role of gender in the use of remittances may lead to biased conclusions. Again, despite the many advantages associated with child welfare clinics, no attempt has been made so far to investigate the effect of remittances flow on child welfare clinic attendance in Ghana. Finally, studies on the effect of remittances on child education (Gyimah-Brempong & Asiedu, 2015; Hines, 2014; Elbadawy & Roushdy, 2009; Bouoiyour & Miftah, 2016) have ignored the nursery and kindergarten levels in their estimations. However, these levels are. nonetheless, very important parts of the school structure.

Objectives of the Study

The main objective of the study is to examine the effects of remittances on child welfare in Ghana. Specifically, the study is to:

1. Examine the effect of remittances and gender on child labour.

2. Investigate the effect of remittances on child welfare clinic attendance.

3. Investigate the effect of remittances on child education.

Hypotheses of the Study

The study seeks to test the following hypotheses

1. H_o: Remittances and gender do not affect child labour

   H_a: Remittances and the gender affect child labour

2. H_o: Remittances do not influence child welfare clinic attendance

   H_a: Remittances influence child welfare clinic attendance

3. H_o: Remittances do not influence investment in child education.

   Ha: Remittances influence investment in child education.

Significance of the Study

Child welfare is important to study for several reasons. The most obvious may be the immediate compromise of a child's wellbeing if the child is engaged in child labour rather than attends school. Children who are less educated are likely to have fewer employment options when they grow than their counterparts who have higher education. This has negative consequences for the individual, which often has spill over effects on the household. It is therefore important to understand how many factors including remittances affect child labour, child education and child welfare clinic attendance in Ghana.

Furthermore, regardless of the reason behind the differential propensity to use remittance income versus other ordinary income on education, child welfare clinic attendance and child labour, understanding the differences between the two propensities can inform us on policies more suited to alleviating child education and child health deficiencies and reduce child labour supply. If households display a greater propensity to spend on child education, health care and reduce child labour, it may be worthwhile to adopt policies that encourage and facilitate remittance transfers as a means of improving child welfare.

In addition, investigating the gender effect of the household head on child labour will contribute to the limited existing research on the gender dimensions associated with the potential gains from remittances. It will also lead to the creation of concrete policies, programmes and actions for the eradication of child labour in Ghana. Again, the inclusion of nursery and kindergarten education in the measurement of child education would

contribute to the existing methods used in measuring the effect of remittance income on child education.

Moreover, the results which are of interest for economic policy making in Ghana may have broader relevance to the remittances and child welfare debate as well. Since household incomes in Ghana are a fraction of those in many other developing countries that receive remittances, these remittances may be used differently by households in Ghana than in other developing countries, and their effect on child welfare may be different. Thus, our results can add to the body of comparative evidence available on the impact of remittances on child education, child health and child labour in other countries. Finally, the results of the study will provide useful input to policy makers, government and organisations such as UNESCO, UNICEF and the ILO to develop policies and programmes aimed at improving child welfare

Scope of the Study

The study examines the effect of remittances on child labour. Here, children whose ages are from 5 to 14 years (i.e. less than 15 years) are considered. This age range is consistent with the ILO (broad) definition of child labour (ILO, 2013).

The study also looks at the effect of remittances on child welfare clinic attendance by the mother (and child). Nursing mothers are encouraged to send their children under five years regularly to child welfare clinics so as to keep them healthy. It is expected that regular child welfare clinic attendance will lead to an improvement in the health of the child.

Finally, the study investigates the effect of remittances on child education. The study examines the effect of remittances on the development of

children left behind in Ghana using the number of hours a child spends in school as an indicator.

In this study, remittances comprise both international and internal remittances. International remittances are understood as cross-border, private, voluntary monetary transfers made by migrants and diaspora, individually or collectively, to people or to households in Ghana. On the other hand, internal remittances are understood as private, voluntary monetary transfers made by internal migrants individually or collectively to people or households in Ghana.

Organisation of the Study

Chapter two focuses on an overview of child labour, education and healthcare system in Ghana. The theoretical and empirical literature on the study under review is discussed in chapter three. That is, remittances and their effect on children's welfare outcomes. The methodology used in investigating the effect of remittances on child welfare in Ghana is discussed in chapter four. Chapter five involves the econometric analysis of the effect of remittances and gender on child labour. Chapter six empirically analyses the effect of remittances on child health. Chapter seven focuses on the econometric analysis of the effect of remittances on child education. Finally, summary, conclusion and recommendations of the study, study limitations as well as suggestions for further research are discussed in chapter eight.

CHAPTER TWO

CHILD LABOUR, HEALTH CARE SYSTEM AND EDUCATION IN GHANA

Introduction

This chapter focuses on child labour, the healthcare system as well as education in Ghana. It looks at an overview of child labour in Ghana and continues with the historical overview of the health system in Ghana and further deals with the nutritional status in Ghana as well as childhood mortality. Finally, the chapter discusses the historical overview of education and explains the different stages of education in Ghana.

Overview of Child Labour in Ghana

According to Ghana's 1992 Republican Constitution, a child is anyone below the age of 18 years. The Ghana Children's Act (Act 560) prohibits exploitative child labour, and this is defined as labour that deprives children of health, education and development. Ghana has not yet ratified the ILO Minimum Age Convention (1973), but its national legislation complies with it. A minimum age of 13 years is set for light work, 15 years for employment and apprenticeship and 18 years for hazardous work.

Child labour in Ghana is not a matter of choice, but rather, a matter of necessity. The prevalence of high poverty rate in some parts of the country compels some parents to depend on their children for extra income needed for the upkeep of the household. Much of child labour in Ghana is performed in the informal sector. UNICEF (2013) reports that in Ghana, most children work on farms and plantations or houses, far from the reach of labour inspectors and from media scrutiny. For instance, rural Ghana has poor infrastructure and

lacks resources, particularly clean water. In view of this, most households in this part of the country are severely deprived financially. The effect is that most of their children are often pushed out of school and onto the farm.

Child labour is also perpetuated by traditional perceptions of the family and the corresponding obligations placed on members in that family. Historically, having more children in a household has meant there are more hands to work on the farm. Beyond tradition, there is also the economics aspect of it. Most households are unable to hire labour to work on their farms, thus further necessitating the burden placed on children in the households to work for their parents.

According to UNICEF (2013), 34% of children, boys and girls, between 5 and 14 years are engaged in child labour. In the GLSS 6, it was revealed that 28.5% of the children aged 5-17 years participated in economic activity of which males constituted 29.2% and females, 27.7%. The proportion of children in economic activity was higher in rural (39.0%) than in urban (16.8%) areas. The proportion of male children in child labour was slightly higher (22.7%) than females (20.8%). The proportion of urban children in child labour was 12.4% while that of rural localities was 30.2%. It is stated in the 2003 Ghana Child Labour Survey (GSS, 2003), that child labour is found in many sectors of the Ghanaian economy. The agricultural sector for instance, has the largest proportion of children engaged in child labour (62.5%). According to a report by Tulane University that assessed data collected during the 2008-2009 harvest season, 997 357 children ages 5 to 17 were estimated to be working in the cocoa sector alone.

Although there is legislation in place to prevent exploitative child work in Ghana, child protection laws are rarely invoked and their enforcement remains weak. Apart from this, the Ghana Child Labour Monitoring System (GCLMS), which is an active process to regularly check workplaces to ensure that children are not working at those places has been established to eliminate child labour in Ghana. However, all these measures have so far not worked up to expectation.

Health Care System in Ghana

This section discusses the historical overview of the health care system, the nutritional status, infant and young child feeding, child mortality as well as the deficiencies of micronutrients in Ghana.

Historical Overview of the Health Care System in Ghana

According to Senah (2001), the colonial health care system in Ghana is said to have developed in three phases. The first phase (1471-1844) saw the emergence and the subsequent establishment of biomedicine. According to Dumett (1993), before independence, funding of healthcare in Ghana was the sole prerogative of the colonial government or the missionaries where they involved in the provision of healthcare. The health care system was established partly to protect the colonial masters against the possible contraction of infectious diseases from the "unhygienic" conditions of the "natives' environment" who they interacted with on a daily basis (Senah, 2001).

The second phase of colonial health care system in Ghana began when the bond of 1844 was signed between the British and some local chiefs. The bond was signed in order to enhance European commercial and Christian

missionary activities in the hinterland and to also promote the realization that the colonial masters could enjoy good health and also ensure that the health needs of native Ghanaians were also met (Twumasi & Bonsi, 1975). The third phase of the colonial health care system in Ghana was marked by the establishment of the Cape Coast hospital and dispensaries in several rural communities (Senah, 2001).

Subsequently, in 1923, the Korle- Bu Teaching Hospital was built to purposely serve the health needs of Ghanaians. After Ghana gained independence in 1957, priority was given to effective social and welfare services as a consequence of the devastating effect of colonialism on the health sector. The first national government led by Dr. Kwame Nkrumah revamped the health sector by expanding and modernising health facilities and also training more medical personnel to improve health care delivery (Opare & Mill, 2000).

Subsequently, it became easy and more convenient for Ghanaians to seek medical care in government hospitals, health centre and pharmacy at no cost. Senah states that between 1957 and 1963 the number of health centres in Ghana increased from 10 to 41. Also, between 1963 and 1964, about 31 % of total public expenditure went towards the provision of social services with much attention given to the health sector. Again, between 1965 and 1969 government's health expenditure increased from 6.4% to 8.2% of total public expenditure (Patterson, 1981).

Given the above statistics, there is no gainsaying the fact that the government spent more on health care and human resource development. In subsequent years, however, the quality of healthcare began to decline and this

was mainly because subsequent governments failed to invest in the health care system (Osei-Boateng, 1991). Thus, in 1969 user fees were introduced in the health care system and continued until the "Cash-And-Carry" or "Full Cost Recovery System" was introduced in 1985. Upon adoption of the Structural Adjustment Programme (SAP), the government was charged with the responsibility of reducing expenditure on healthcare drastically.

As a consequence, patients had to bear the full burden of paying for healthcare. According to Asenso-Okyere and Dzator (1997), government expenditure on health reduced from 10% of the national budget in 1982 to 1.3% in 1997. As healthcare became expensive in the country, many people avoided going to hospitals and health centres to seek medical attention and instead, engaged in self-medication or other cost-saving behaviours or practices (Asenso-Okyere, Anum, Osei-Akoto, & Adukonu, 1998).

As a result, in 2003 the Kufour- led administration introduced the National Health Insurance Scheme (NHIS), with the view to providing affordable health care to all residents of Ghana. Essentially, the "Cash and Cary System was abolished and the NHIS was introduced to remove the financial barriers that prevented so many Ghanaians from accessing healthcare services and to ensure equitable access to quality health services especially by the poor and vulnerable. The NHIS is currently financed from four main sources: a value-added tax on goods and services, a reserved portion of social security contributions from formal sector workers, individual premiums, and miscellaneous funds from investment returns, Parliament and donors. The 2.5% tax on selected goods and services, called the National Health Insurance Levy (NHIL), is the largest source of funding, comprising about 70% of

revenues. Social security taxes account for an additional 23%, premiums account for about 5% while other funds account for the remaining 2% (Yankah, 2009).

Nutritional Status in Ghana

Nutritional status is primarily measured by a child's growth in height and weight and is directly influenced by food intake and the occurrence of infections. Over the years, Ghana has made great strides in the health sector and so much resources have been invested to sustain this effort. In spite of this, however, available data shows that the rate of under-nutrition is still high. According to the UNICEF report on health and nutrition (2016), more than one in five children in Ghana is suffering from chronic malnutrition. The report further states that the situation is worse in the Northern Region where 37% of children are stunted due to childhood malnourishment.

Ghana has so far made some progress in improving child nutrition over the past two decades – such as reducing chronic malnutrition or stunting from 23 to 19% but there is the critical need for further progress (UNICEF, 2016).

Infant and Child Feeding

Both UNICEF and WHO recommend that children should be exclusively breastfed on demand for the first six months of life. To exclusively breastfeed means feeding infants only breast milk without giving them food, other liquids or water. The recommended Infant and Young Children Feeding (IYCF) practices for complementary feeding of children age 6 to 23 months are: continued breastfeeding or feeding with appropriate calcium-rich foods if not breastfed; feeding solid or semi-solid food for a minimum number of times per day according to age and breastfeeding status; and including foods from a

minimum number of food groups per day according to breastfeeding status. Breastfeeding is nearly universal in Ghana—98% of children are ever breastfed, 52% are breastfed within an hour of birth, and 82% are breastfed within 24 hours of birth. The average length of breastfeeding is 20 months.

In Ghana, 63% of children under six months are exclusively breastfed, and the average length of exclusive breastfeeding is 4 months. However, only 41% of breastfed children and 11% of non-breastfed children age 6–23 months are fed according to all of the recommended IYCF practices.

Childhood Mortality

The 2014 GDHS report shows that infant mortality declined by 47% since 1988, from 77 deaths per 1 000 live births in 1983-1987 to 41 per 1 000 live births in 2010-2014. During the same period, under-5 mortality decreased by 61% from 155 deaths per 1 000 live births to 60 deaths per 1 000 live births.

An examination of neonatal mortality rate in Ghana since 1998 reveals that it has decreased at a slower pace than infant and child mortality. This has resulted in an increase in the contribution of neonatal deaths to infant deaths from 53% in 1998 to 71% in 2014 (GDHS, 2014). Over the same period, the contribution of neonatal deaths to under-5 mortality also increased from 28% of under-5 deaths to 48%. This calls for more measures aimed at decreasing neonatal mortality rate to be implemented because it is happening against the background of the implementation of the Health Sector Medium-Term Development Plan 2010-2013, which is part of the Ghana Shared Growth and Development Agenda 2010-2013, including the Community-based Health Planning and Services (CHPS) policy, National Health, Insurance Policy,

which provides for free treatment of children under age 18; free maternal delivery services; and malaria control interventions.

Deficiencies of Micronutrients

In Ghana, deficiencies of micronutrients, particularly vitamin A, iron, and iodine, have an immense impact on child mortality.

Vitamin A Deficiency

A significant problem in Ghana is vitamin A deficiency, which affects about 7 in 10 children under 5 years of age (Ghana Health Service, 2007). Estimates show that vitamin A deficiency contributes to 1 in 3 deaths of children 6–59 months of age. This means that between 2011 and 2020 the number of child deaths attributable to vitamin A deficiency will total 110 000 (Ghana Nutrition PROFILES, 2011) In view of this, a lot needs to be done to ensure that the problem of vitamin A deficiency amongst children is tackled.

Iron Deficiency Anaemia

Anaemia is a condition characterised by a reduction in the red blood cell volume and a decrease in the concentration of haemoglobin in the blood. In Ghana, the most common causes of anaemia are inadequate dietary intake of iron, malaria, and intestinal worm infestation (Ghana Health Service, 2007). According to the Ghana demographic health survey report (GSS, 2015), 66% of children age 6-59 months in Ghana have some level of anaemia: 27% are mildly anaemic, 37% are moderately anaemic, and 2% are severely anaemic. The prevalence of any anaemia is highest among children age 6-8 months (80%); and more than 7 in 10 children under age 2 are anaemic. Overall, prevalence of anaemia decreases as the age of the child increases.

Educational System in Ghana

This section focuses on the historical overview of education, the system of education and the way forward for education in Ghana.

Historical Overview of Education in Ghana

Formal education is an important part of the skill acquisition process and development of the stock of human capital. It contributes to the process of moulding attitudinal and developing technical skills (Oduro, 2000).Various attempts have been made by scholars and stake holders in the educational sector to analyse the main determinants of education and specific impact education has on an individual and society in general. The people who made initial attempts to introduce formal education in Ghana were the European merchants (especially the Danes, Dutch and English) and their main intention of doing so was to provide employment for their administrative assistants and soldiers.

The Christian missionaries also played an important role as far as the establishment of formal education in Ghana was concerned. In fact, they realised that, in order to create an independent native church, they needed to have a staff of well-educated local assistants. By 1874 when the British Government took control of the administration of colonial the Gold Coast colony, so much progress had been made in the educational sector and it was still expanding with the majority of the Basel and Wesleyan Mission schools scattered widely over the interior (Okletey, 2013).

According to Okletey (2013), by 1881 there were 139 schools of which the Basel Mission had 47 schools, the Wesleyans 84, the Bremen Mission 4 and the Roman Catholic Church had 1. The government, however, realised

that there were so much differences in the systems of education adopted by the various missions. In view of this, in 1882 the government drew the first plan to guide the development of education in Ghana. The main focus of the plan was to establish a General Board of Education (GBE), and to form local boards to study and report on existing conditions.

In 1919, the then governor of the Gold Coast, Sir Gordon Guggisberg made remarkable contribution to the educational sector in Ghana (Okletey, 2013). Governor Guggisberg set up the '1922 Committee', which eventually led to the establishment of many schools and colleges in the country. By 1950, the total number of primary and secondary schools reached 3,000 with an enrolment of 280 960 boy s and girls. About 6.6% of the population of 4.2 million were in school (Okletey, 2013).

The government policies and strategies for education in 1957 were aimed at achieving three objectives. First, the policies and strategies were to be used as a tool for producing a scientifically literate population. Secondly, they were to be used as a tool for improving productivity in the country; and thirdly, for producing knowledge to harness Ghana's economic potential. Investments were therefore made in the whole system of education, from primary to tertiary education with the aim of achieving these objectives.

As part of measures aimed at improving the educational system in Ghana, the government initiated the Education Act in 1961 (Act 87), aimed at achieving Free Universal Primary Education. The Act had a two-tier system of education as instituted by the British in colonial times, namely primary and middle education, and secondary education. Three main issues can be highlighted from the Act; First, the Act established Local Education

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Authorities within Local Authorities and entrusted them with the responsibility to build, equip and maintain all public primary and middle schools in their areas. It was also to establish all such public primary, middle and special schools as are, in the opinion of the Minister, after consultation with the Minister responsible for Local Government.

Second, the 1961 Act made education compulsory. For instance, Section 2(1) states that: "Every child who has attained the school-going age as determined by the Minister shall attend a course of instruction as laid down by the Minister in a school recognized for the purpose by the Minister."

The third important feature of the 1961 Act is that it emphasized for the provision of free education. Section 20(2) stipulated: "No fee, other than the payment for the provision of essential books or stationery or materials required by pupils for use in practical work, shall be charged in respect of tuition at a public primary, middle or special school. The 1961 Act brought in its wake, very important policies aimed at expanding access to education at all levels and in just a matter of a few years after independence, Ghana had an education system that could be described as one of the most respected in Africa (White & Masset, 2004).

The government was overthrown in 1966 by the National Liberation Council and this gave birth to a new set of educational reforms. The military government, appointed an Education Review Committee (ERC) to examine the problems arising out of the educational system at that time and also to make recommendation for improvement. The Review Committee's proposals covered a wide range of issues concerning education from primary to the

university. The structural recommendations by the committee included the following;

- The school-going age should be six years.
- Elementary education should have duration of ten years with a break at the end of the eighth year for selecting those suitable for secondary education.
- After this selection, the remaining middle school pupils should complete their elementary education by attending for two years pre-vocational continuation classes where these are available; otherwise the pupils should continue the study of the ordinary school subjects for the two remaining years.
- Two-year pre-vocational continuation classes patterned on the industrial and farming needs of the country should be established in two middle schools of each region to serve as a pilot scheme.
- The secondary school courses should have a duration of five years, at the end of which suitable pupils may proceed to a two year sixth form course.
- The first-degree course at the university should be of three years' duration (four years or more for specialized courses) (Akyeampong, 2010).

In 1972 Ghana witnessed yet another coup d□état led by General Ignatius Acheampong and this led to the development of elaborate programme for education from kindergarten through primary and Junior Secondary School to Senior Secondary School. The new structure and content of education for Ghana were stipulated in the Dzobo Review Committee in 1974.

Among other things, the Dzobo committee made the following observations:

- The common entrance as a selection mechanism for secondary school, taken at an early age, discriminated against the many pupils who needed more time to find their levels in life.

- The many pupils who fail to enter secondary schools did not have the opportunity to develop their minds and were therefore disadvantaged in life.

- Undue emphasis on mental work inadvertently fostered the development of unhealthy attitudes towards manual work and occupations of non -academic kind.

- Under the existing system, it took 15-17 years to complete pre-university education, whereas in industrialized countries, such as the USA, it occupied 12-13 years (MOESS, 2008).

Subsequently, Ghana experienced a serious national economic decline which affected all social sectors. The economic constraints that bedevilled the country in the late 1970s, made the implementation of the new JSS system virtually impossible. In the early 1980s, Ghana with the support of development partners (i.e. World Bank, IMF`, DFID, etc.) embarked on a number of Economic Recovery Programs (ERP), to salvage the economy from further decline and to ensure that the educational sector was on track. Thus, the Education Sector Adjustment Credit Program (ESACP) was introduced to ensure that the review of the Dzobo Report was undertaken.

In 1987, some reforms were undertaken and they sought to achieve the following broad objectives:

- Reduce the number of years in pre-tertiary education from 17 to 12 years by turning the 4-year middle into a 3-year junior secondary school and changing the 7-year Ordinary and Advanced level secondary school into 3-year Senior Secondary Schools, all in addition to the 6 years of primary schools.

- Increase access and thus enrolment.

- Improve teaching and learning by increasing school hours – as well as the school term and replacing untrained teachers with trained ones over time.

- Increase "cost recovery" at the secondary and tertiary levels by, abolishing food subsidies at boarding schools and charging tertiary students user fees so that they pay a part of the cost of their education, including accommodation expenses.

- Make education planning and management more effective.

In a bit to achieving the set objectives, Junior Secondary Schools were established nationwide. Thus, the 6 years of primary school and 3 years of Junior Secondary School were consolidated into a uniform and continuous 9-year free and compulsory basic education. As part of the reforms, there were revisions in the syllabi and the provision of educational resources ranging from infrastructure such as classroom blocks and libraries and text books and technical skills equipment to enhance teaching and learning. Also, more Senior Secondary Schools were built to absorb the expected increases in enrolment.

Between 1992 and 2000, the government further made significant contribution to the education sector in Ghana. For instance, in 1996, an

educational sector policy known as Free Compulsory Universal Basic Education (FCUBE) was introduced. The main objective of the FCUBE policy was to address the quality concerns in basic education. Thus, the government ensured that more resources were allocated to the education sector to enhance quality and management for efficiency. The FCUBE also aimed at improving teaching processes and learning outcomes; build capacity to manage the basic education; and improve access to basic education, particularly for girls and vulnerable groups in society (Akyeampong, 2010).

Overall these measures did not lead to major improvements in quality. The measures did not make a significant difference to ensure that all children of school going age receive free compulsory quality primary education by 2005 (Akyeampong, 2010). In order to address challenges in the educational sector, in 2007 the government set up the Anamuah-Mensah committee to review the entire educational system in Ghana and make it responsive to current challenges.

In order to improve quality in the educational sector and increase the number of students who pass the Senior Secondary Certificate Examination (SSCE), the following policies were put in place:

- Extension of the Senior Secondary School from three years to four years.

- Implementation of the capitation grant and the school feeding program at the basic level. The basic school system will then consist of 2 years of kindergarten, 6 years of primary education and 3 years of Junior High School.

- Upgrading of teacher training into the tertiary education system (MOESS, 2008).

Subsequently, the 2007 education reforms faced a number of problems at the implementation stage. For example, there were delays in the supply of syllabuses and textbooks for the smooth take off of the program, teachers were not adequately prepared in terms of training to implement the reforms and there were inadequate classrooms and other facilities as students proceeded to the fourth year of the Senior High School in September 2010 (MOE, 2010).

In August 2009, the government reverted the 4 years Senior High School to 3 years due to the challenges the four years system posed to the government.

In conclusion, it is quite interesting to note that from the colonial era to date Ghana's education system has gone through remarkable transformation with a great deal of success. However, each reform under the various regimes also came along with new challenges as well and the way forward is to ensure that the government put in place a kind of education system to produce the kind of human resource that is required by the various industries as the country aspire to attain a full middle income status by the year 2020.

The System of Education in Ghana

The system of education in Ghana consists of basic education, secondary/technical/vocational education and tertiary education

Basic Education

Basic Education in Ghana is now 11 years made up of 2 years of Kindergarten, 6 years of Primary School, and 3 years of JHS. The reason why the 2 years of kindergarten education has been introduced is to ensure that pre-

school education which plays a very important role in the formative years of the child progressively becomes part of the universal, free and compulsory basic education structure.

Secondary Education

The core subjects taught at the Senior High School (SHS) level are as follows: English language, mathematics, integrated science, social studies and information communication technology (ICT). In addition to the core subjects at the Senior High School, students are offered the opportunity to choose one of the programmes either in agriculture, technical, vocational and general education. The new structure and content of the SHS instruction is to adequately prepare students to enter university or other institutions. Secondary education in Ghana is currently faced with the problem of providing equitable and meaningful access to all qualified students so that dropout rate is significantly reduced. Another challenge being faced by secondary education is the rising cost to both government and parents. This problem is likely to prevent some qualified students from pursuing secondary education thereby affecting enrolment in the secondary schools.

Technical and Vocational Education

Training is vocational in nature at the secondary level. At the secondary level, vocational technical education aims at equipping young men and women with relevant productive skill training that will enable them fulfil the country's manpower needs in the field of technology, industry, commerce, agriculture, and business (Baiden, 1996). Ghana uses a combination of two approaches to organise vocational technical education at this level:

(a) The parallel system where vocational technical institutions exist alongside the senior high school system. Graduates from the basic level can enter the technical institutes or the SHSs. In the technical institutes, the aim of the government is to train and impart skills leading to the provision of artisans, craftsmen, technicians, and other middle-level personnel in commerce, agriculture, technology, science, and industry.

(b) For those who enter the senior high school after the basic level education, there exist a core curriculum and a cluster of elective subjects, which could be vocational technical in nature. Any student interested in a career in vocational technical could select at least three elective subjects in any particular vocational or technical field, which the individual student will have to study in addition to the four core liberal subjects (Boateng, 2012).

At the tertiary level, vocational technical education is technical in all aspects. It is provided in the universities, polytechnics, technical universities and other post-secondary pre-service training institutions (Boateng, 2012). Vocational technical education systems in Ghana continuous to undergo reform designed to build on the inherent strengths of the system. Recent major reform concern the setting up of national training bodies, and the enactment of laws to strengthen national vocational training programmes.

The newly established Council for Technical and Vocational Education and Training (COTVET) will have overall responsibility for skills development in the country. In a bit to improving enrolment in Technical Institutes, the Technical and Vocational Education Division in collaboration with West African Examinations Council and Computerised School Selection and Placement System (CSSPS) have introduced a new scan-able form for

Technical Institutes separate from that of Senior Secondary Schools. The objective is to provide better information on technical institutes and increase enrolment.

The nature and characteristics of vocational technical education in Ghana presents some unique challenges to institutions. For instance, Vocational technical institutions require workshops, modern tools, equipment, and materials. Vocational technical subjects need to be allotted sufficient time to satisfy their practical goals (Boateng, 2012).

Another challenge facing vocational technical education in Ghana is perception that it is a route for drop outs in education. This perception coupled with lack of progression routes from vocational technical education into higher education. In 2002, a survey of public TVET teachers found that none of the 87 respondents wanted their own children to study TVET programmes (Anamuah-Mensah, 2004).

Tertiary Education

During the last two decades, tertiary education in Ghana has experienced a significant growth. The tertiary level of education in Ghana currently comprises the training colleges, polytechnics/technical universities, universities and other professional institutes. Currently there are 9 universities within the public sector which comprises; University of Ghana, University of Cape-Coast, Kwame Nkrumah University of Science and Technology, University of Education, Winneba, University of Development Studies at Tamale, University of Mines and Technology at Tarkwa, University of Health & Allied Sciences in the Volta region, University of Energy and Natural

Resources in Brong Ahafo region and University of Professional Studies, Accra, formally known as IPS at Legon.

Apart from the aforementioned universities, there are other public degree awarding or professional institutions at the tertiary level. These include The Ghana Institute of Journalism (GIJ), The National Film and Television Institute (NAFTI), Ghana Institute of Management and Public Administration (GIMPA), Ghana Armed Forces Command and Staff College, Institute of Local Government and Kofi- Annan International Peace Keeping Training Centre (KAIPTC). There is also the Ghana Institute of Languages (GIL) which provides specialized professional training for interpreters and translators in various languages.

The second public sector institutions comprise 10 polytechnics/ technical universities, one in each region. It must be noted that in the last two decades so many private tertiary institutions have also been established in various parts of the country to increase enrolment of students. For instance, total enrolments increased tenfold from 10,000 in 1990 and close to 100,000 in 2008. The period 1990-2004, the average annual growth rate reached 18 % for all tertiary institutions combined and 16 % for universities (MOESS, 2008). In the private tertiary institutions alone, the percentage enrolment has shot up from 4% to almost 20% from the period 2004-2008 (MOESS, 2008).

There has also been a significant increase in enrolment in the polytechnics over the years. However, the increase is more towards business related programmes and not in science and technology programmes. Addae-Mensah and Asare (2005) state that "educational institutions, including those set up to promote science and technology education, are drifting away from

the national norm of 60:40 science and humanities". In contrast with universities, which tend to be more academic in nature, polytechnics are supposed to prepare students for practically oriented middle-level professions.

The Way Forward for Education in Ghana

Since Ghana's independence to date, remarkable achievements have been made by introducing several reforms in the educational system. However, a lot more have to be done to ensure that more successes are checked. There should be massive investment in education so as to raise performance in school. There is also the urgent need for Government to make a paradigm shift in its education policy in favour of the vocational and technical education, in order to give employable skills to the numerous youth in the country. There is currently a greater number of the youth who are unemployed because they do not have employable skills.

Conclusion

This chapter has discussed child labour as well as the health and education systems in Ghana. Both the health and education sectors have gone through several reforms and restructuring. The reforms in the health sector are geared toward an improvement in health delivery. The reforms in education sector are aimed at developing employable skills for majority of school leavers.

CHAPTER THREE

LITERATURE REVIEW

Introduction

This chapter focuses on the literature relevant to this thesis. It begins with the theoretical literature review by discussing the varying definitions of remittances, motives for sending remittances and the various theories of migration. The chapter further discusses the empirical literature on remittances and child labour, remittances and child welfare clinic attendance and finally, remittances and child education.

Theoretical Literature Review

This section deals with concepts and reviews relevant theoretical literature on issues related to the study.

Operational Definition of Child Welfare

In this study, child welfare is defined as a state of good health and the presence of conditions aimed at protecting and improving the general wellbeing of a child.

Definition of a Child

A child is defined as one who is still largely dependent on an adult for the necessities of life. In this study, a child is a person aged less than 15 years.

Definitions of Child Labour

Child labour is a complex phenomenon and so there is no child labour definition that is universally accepted. Thus, the definitions of child labour differ by actors, history, context and purpose (Weston, 2005). United Nations International Children Emergency Fund (UNICEF) (1997) states that child labour is a long scale of continuum where one end of it enhances a child's

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physical, mental, spiritual, moral or social development without interfering with schooling, recreation, and rest. The other end of the scale, however, is destruction or exploitation.

This claim by UNICEF raises a number of pertinent questions. For instance, under what circumstance should one regard child labour as being beneficial and under what situation should it considered dangerous? There are clearly some forms of child labour that are unacceptable and should not be tolerated at all- child soldiers, child prostitutes and bonded labourers. However, other activities such as house chores and farm work need to be carefully examined to determine the extent at which they impact on children. According to Moyi (2011), it is possible for a particular type of child work to be beneficial and dangerous to the child at the same time. For example, if a child works on the farm, it may lead to the production of food and income. However, working on the farm during school hours will adversely affect the child.

Generally, definitions of child labour are either too narrow or too broad. The ILO defines child labour as a situation where

- children between 5-11 years of age are economically active;
- children between 12-14 years of age work in an economic activity for 14 or more hours per week; and
- children between 12-17 years of age engaged in hazardous work.

The assumption is that any work that does not interfere with children's education or health is positive. The definition provided by the ILO is narrow in the sense that it does not include household chores. It therefore tends to underestimate the burden of work on children, especially for girls, who are

more likely than boys to perform work in a household (Gibbons, Huebler, & Loaiza, 2005). In most countries majority of children participate in household chores by taking care of their siblings, farming, fetching water, cooking and cleaning (Reynolds, 1991). UNICEF has expanded the ILO definition of child labour by incorporating the importance of domestic work by children in its definition. Thus, it defines child labour broadly as work that exceeds (1) 1 hour of economic labour or 28 hours of domestic labour for children aged between 5 and 11 years (2) 14 hours of economic labour or 28 hours of domestic labour for children between 12 and 14 years, and (3) 43 hours of economic labour for children between 15 and 17 years.

The definition by UNICEF is not only broad but it is also inclusive and a significant improvement from the ILO definition. However, it is without limitations. According to Huebler (2006), the definition by UNICEF provides a good indicator of child labour that is harmful to a child's physical or mental development. It is, however, of limited value for an analysis of the trade-off between work and school attendance. The fact that a certain number of children in a country are engaged in child labour, as defined by UNICEF, does not mean that the remaining children are free to attend school (Chaubey, 2007).

Operational Definition of Child Labour

For the purpose of this study, child labour is defined as any economic activity performed by a child between the ages of 5 and 14 years that has the potential to hinder or negatively affect his/her health, education, moral or normal development.

Remittances: Definitions and Characteristics

According to the IMF (2009), remittances income refers to *"cross-border payments of relatively low value, often recurrent person-to-person payments by migrants."* The IMF's definition is what is often referred to as international remittances. However, many migrants who remit do not necessarily cross any borders, but migrate to another city or region. The remittances they send can have much of the same function and characteristics as international remittances and should be included in the definition. Thus, Sander (2003) defines remittances as:

"Monies sent from one individual or household to another. International remittances are those sent by migrant workers who left their home country. Domestic (internal) remittances are those sent by migrant workers who left their home village or town to work elsewhere in their home country (e.g. rural-urban migration)."

It is important to note that there is a distinction between household or individual remittances and communal or collective remittances. Household remittances are funds transferred from one individual or household to another at international or domestic level. On the other hand, Collective remittances are more often used for investment in the village or town, that improves living conditions of community members i.e. schools, churches, hospitals etc. (Sander, 2003). This thesis focuses primarily on household remittances, or what Goldring (2004) refers to as family remittances. The author states that:

"the practices associated with sending money "back home" are steeped in norms, obligations and/or affective ties that are bound up in processes of identity formation, gender and socialization, which are in turn rooted in social

networks (of kinship, fictive kinship, friendship, etc.) and processes related to the construction of community, ethnicity and nation" (Goldring, 2004).

"Back home" is used here quite metaphorically and it might mean in a general sense, anywhere household members and friends are residing since they are likely to be dispersed around the country- or even the world in search for a living.

There also exists a more technical definition of remittances which is related to how remittances should be registered by each country in the balance of payments and reported to the IMF (see IMF, 2009). The technical definition of remittances is quite complex and is not considered here since it serves no purpose for the sake of this thesis. It is quite common to separate between formal and informal remittances; informal remittances being those remittances which are not recorded by official statistics because informal channels such as Hawala, Hundi and Fei Ch'ien among others are being utilized (IMF, 2009; Sander, 2003).

These informal channels tend to be used more where the financial sector is either missing, weak, or unreliable (Sander, 2003). Migrants also bring large amounts of money back to the household themselves or through friends. This practice can also be understood as part of the total amount of remittances remitted to back home. However, they are unlikely to be recorded in official statistics and are thus informal. The same applies to goods that are sent home which are often understood as remittances, but do not necessarily reflect in any statistics.

Motives for Sending Remittances

Many theories explain the motives behind migrants' decisions to send remittances to their relatives back home. The theoretical debate about the motives of remittances was triggered by Lucas and Stark (1985) with their ground-breaking paper "Motivations to remit: Evidence from Botswana". Lucas and Stark studied remittances on a household level and claimed the main motives to be "pure altruism", "pure self-interest" and "tempered altruism or enlightened self-interest". Any kind of contractual arrangements between the migrant and household left behind can be in the latter category, for example co-insurance, exchange-motives and loan repayment. Motives by altruism assume that an agent receives utility from an increase in utility of family members left behind.

On the other hand, an agent may send remittances based on selfish motives. For instance, a migrant may send remittances to the household back home to invest in a property that he or she may eventually use as his or her home. Solimano (2003) states that the analytical literature on the motives behind remittances can be summarised in the following four approaches namely; altruistic motive, self-interest motive, implicit family contract 1: loan repayment and implicit family contract II: Co-insurance.

Altruistic Motive

Altruistic motive is associated with a situation where remitting is considered as an obligation to the household. Migrants send out remittances to the families out of affection and responsibility towards the families. The migrant, thus, cares about poverty, shocks and other unfortunate situations that the family might face and consequently sends remittances. In this case, there is

a positive relationship between adverse conditions of the receiving household and remittances sent. The altruistic model asserts that sending remittances to households yields a satisfaction to the migrants out of a concern for the welfare of their families. In the endogenous migration approach, Elbadawi, de Rezende Rocha, and Mundial (1992) are of the view that remittances are usually linked to the migrant's ties with his/her family. Very interesting results may be obtained from an altruistic model wherein the migrant derives utility (U_m) from the utility of those left at home, and the latter utility is presumed to be dependent on per capita consumption (C_h). For example, suppose the migrant maximizes his own utility with respect to the amount remitted (*r*):

$$U_m = u[c_m(w-r), \sum_{h=1}^{n} a_h u(c_h)]$$

(1)

where *w* is the migrant's wage, c_m is his or her consumption, a_h are altruism weights attached to various household members, and *n* is the household size and c_h is the household's consumption. Consumption per capita may further be assumed to increase with income per capita available for the household and may also vary with household size if there are economies or diseconomies of scale in consumption. Thus, we have

$$c_h = c\left(y + \frac{r}{n}, n\right)$$

(2)

where *y* the income per capita at home before receipt of any remittances. Choosing a level of *r* to maximize (1) subject to (2) provides the following remittance function

$$r = f(w, y, n)$$

(3)

If the migrant indeed cares about his home family and if both his utility function (1) and the household utility functions are well behaved, two properties of the remittance function (3) are predicted:

$\partial r / \partial w > 0$ and $\partial r / \partial y < 0$. However, $\partial r / \partial n$ could be greater than or less than zero depending on the presence of diseconomies of scale in consumption and the rate at which the marginal utility of home consumption diminishes. Here, it is assumed that the migrant neither works harder nor accepts worse working conditions with higher pay in order to send remittances home. It is further assumed that no moral hazard is involved in the sense of the home group's reducing effort.

There is a wide academic discussion on how to measure altruism, but it is agreed by most academics that it is not right to measure altruism by only looking at the effect of giver and receiver income.

Self-Interest Motive

According to the self-interest motive, at every point in time, the successful migrant saves and so the need then arises on how and where to accumulate wealth. In most cases, the migrant chooses to invest in his home town or country by buying property, financial assets etc. The family then, acts as a trusted agent by taking care of those assets for the migrant during the emigration period. In this case, a migrant sends remittances home with the aspiration to inherit, to demonstrate laudable behaviour as an investment for the future or with the intent to return home. If a migrant wants to invest at home, the family back home can be a trustworthy and well-informed agent. If a migrant intends to return home, he may invest in housing, livestock, transport services, cash crops etc. and ask the family to be the agent. The

migrant may also send remittances to the household in order to build a reputation for him/herself at home. Inheritance may be used as a blackmailing device by the household head to receive remittances. According to self-interest motive theory, remittances increase with the household's assets and income, the probability of inheriting (dependent on the age of parents, number of siblings, etc.), the migrant's wealth and income, and decreases with risk aversion (Hagen-Zanker & Siegel, 2007). It is only in the case of the aspiration to inherit, can self-interest be distinguished from altruism in the migrant's behaviour and a larger income and or wealth of the household should lead to more remittance income being sent home. Finally, remittances may be sent to parents to ensure that the remittance sender's own children also take care of him in old age (Cox & Stark, 1996; Cox & Stark, 1994). According to Hagen-Zanker and Siegel, this is referred to as the demonstration effect.

Implicit Family Contract I: Loan Repayment

In Economic theory, there are explanations of the remittances process that considers the family as the main unit of analysis (Addison, 2004). The loan repayment theory states that families tend to develop an implicit contract among those who stay at home. This implicit contract combines elements of investment and repayment. Thus, in the loan repayment theory, the family invests in education of the migrant and usually finances the costs of travel by the migrant to the host town or country. When the migrant starts working and his income begins to increase over time, he repays the loan back to the family by sending remittances. In other words, a household finances a potential migrant's education if the family implicit lending rate is higher than the

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market interest rate and the youth borrowing rate is higher than the family implicit lending rate (Poirine, 1997). During the next time period the migrant is able to find a better-paid job in the host town or country due to the education acquired and will send remittances to repay the family for the initial investment. At this stage the migrant might also finance other migrant family members, which increases overall remittances sent to the household. The U-shaped time profile of remittances is shown in Figure 1. In this regard, the family contract has the aim of increasing income rather than reducing uncertainty.
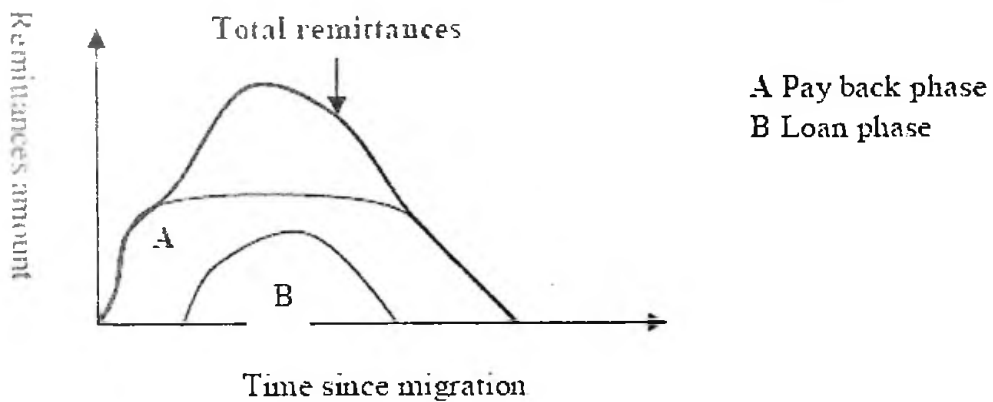
Figure 1: A theoretical average remittance function for loan repayment

Source: Based on Poirine (1997)

Only paying-back can be measured in practice and there should be a positive relationship between the migrant's level of education and remittances sent back to the household.

Implicit Family Contract II: Co-insurance

The New Economics of Labour Migration (NELM) hypothesis states that because of market failures in the home country (for example, a poorly developed social protection system), a household member migrates to a non-correlated labour market, entering a type of co-insurance agreement with the

household left behind. In this model, migration becomes a co-insurance strategy with remittances playing the role of an insurance claim. For instance, if the economic risks between sending and foreign countries are not positively correlated, then the family can send some of its members abroad to diversify the risks. The migrant can support his family during unfavourable economic times at home. Remittances are sent home when the household experiences shocks and to enable the household to invest in new technology. At the same time. the migrant can be supported by his family during bad times in the foreign country. Remittances consequently increase when the household's income decreases or a shock occurs in the household. There should be no correlation between risks at home and risks in the migrant's host town or country for this co-insurance agreement to work properly.

Similarly, Hoddinott (1994) and Hagen-Zanker and Siegel (2007) assert that remittances are business entity where the relation between its members is seen as a contract. By this, the migrant will send remittances back home when it is necessary to do so and will also receive remittances from home when the need arises to do so.

While the above motives are considered to be separate and different, they nonetheless, overlap (for example in the reaction to shocks) and are essentially all the same motive, namely an increase in welfare for the sender. All motives can be included in a general individual welfare maximisation function where the individual maximises welfare that includes different elements including own income and household welfare (altruistic motive), possibly over several time periods (loan repayment, insurance or bequest motive) (Hagen-Zanker & Siegel, 2007). It is not only that an individual may

be heterogeneous in his/her motivations to send remittances, but also that different motivations to remit may coexist within the same individual. For example, family contracts may contain a loan and an insurance element at the same time (Rapoport & Docquier, 2006).

Theories of Migration

A number of models and theories are available in the economic literature that explains the reasons and factors of migration. These models are the integral part of the theory of remittances. The process of remittances is linked with migration. As migrants work and begin to earn income, they send remittances back home to their families. Remittances are therefore, interlinked with migration and a cause of migration. In other words, issues relating to remittances and migration are intertwined, as migration decisions give rise to the provision of remittances.

Migration comprises two types namely; internal and international migration. Internal migration occurs as a result of geographical differences in the supply and demand of labour, mostly between the rural traditional agricultural sector and the urban modern manufacturing sector. Rural workers are attracted by the positive wage differential and migrate to the urban sector (Hagen-Zanker, 2008). On the other hand, international migration is the movement of people across international boundaries.

The research on migration focuses on explaining why people move from one area to another. There is no single theory that explains the causes of migration but one of the most important economic causes is obtaining a higher income in the host country or town. There are also other factors that affect the decision to migrate from one country to another country, such as family and

friendship networks. The most important studies related to this idea are Stark (1991), Massey, Arango, Hugo and Kouaouci (1993) and Bauer and Zimmermann (1995). Yet other researchers attempt to explain why migration occurs. Some important theories of migration are discussed below:

Neoclassical Theory of Migration

The dominant theory in explaining causes of migration is the neoclassical theory with its underlying assumption that migration is stimulated primarily by rational economic considerations of relative benefits and costs, mostly financial but also psychological (Todaro & Smith, 2006). The neoclassical theory understands migration to be driven by differences in returns to labour across markets. According to this theory; migration is driven by geographic differences in labour supply and demand and the resulting differentials in wages between labour-rich versus capital-rich economies. Under the assumption of full employment, the theory predicts a linear relationship between wage differentials and migration flows (Massey *et al.*, 1993; Bauer & Zimmermann, 1999; Borjas, 2008). For an individual to migrate at microeconomic level, the decision is based on cost- benefit-analysis (Sjaastad, 1962; Todaro, 1976).

The analysis declares the decision for migration if the net result of cost-benefit is positive. The wage differences and rates of employment among the migrants' home and host destinations are important factors for emigration. The improvement in the expected earnings in the host country, in the form of increased real salary and more opportunities for employment, increase the probability level to migrate; an improvement in earnings expected in the country of origin reduces the likelihood of emigration; and a reduction in the

costs (economic and social) of transferring from one country to another country increases the emigration under this approach. The costs of migration distance between the towns or countries, language difference and the existence of ethnic networks in the host town or country are found to be important determinants in explaining the process of migration. Government policies have an impact upon migration decision that brings changes in the number of factors of migration. For example, developmental policies that tend to increase the wage level in the home towns or countries and reduce the probability of finding jobs in the host towns or countries.

Similarly, the human capital approach explains that the incentives to emigrate decreases with age and considers the decision to emigrate as an investment for which the current costs will be recovered in future.

In the context of macroeconomic theory, the neo-classical economic theory states that real wage differences among different countries (places) is the main cause of migration and flow of capital (Lewis, 1954; Todaro, 1976). The new international equilibrium is created at which the wages in real terms in all the countries (or places) is restored at the same level. The geographic differences in the supply and demand of labour in the home and host countries or towns are the main factors that guide the decision of individuals to emigrate. Hence, emigration occurs from countries or towns with low wage levels to those with higher wage levels. The second is a capital flow from countries or places where high wage rates are offered to the low rate countries or places.

In recent times, the neoclassical theory of migration has faced a conceptual critique. While this theory is rigorous, it has been viewed as

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mechanically reducing migration factors, ignoring market imperfections, homogenizing migrants and migrant societies and being static. It generally ignores the effects of home and host states and leaves out the importance of politics and policies, which are only considered as additional migration costs.

Push-Pull Theory of Migration

Related to the neoclassical theory is the push-pull framework which continues to emphasize the economic context of the flow of migrant workers (Bauer & Zimmermann, 1995). This theory examines and explains the factors of migration in both home and migrant destinations. The factors of migration in the home country determine the choice of migration and prove helpful in the process of migration. The demographic factors including growth in population, economic factors like high unemployment and low living standards in the home country and socio political factors are included in these factors. These factors are identified as the push-factors. The pull factors of migration include but not limited to: labour demand, better economic and political conditions, existing rules and regulation and incentives for immigration. Any types of migration such as domestic or international may be examined in the light of pull and push factors.

As push and pull factors are largely a mirror-image of each other, the framework has been criticised for its inability to determine dominant factors of migration (De Haas, 2008). The theory fails to identify specific factors that are dominant in the process of migrating from one geographical area to another.

Migration Systems Theory

The main assumption of the migration systems theory posits that migration alters the social, cultural, economic, and institutional conditions at

both home and migrants' destinations (De Haas, 2009). The migration systems theory includes a variety of disciplines and analysis in the process of migration. The base of this theory is to synthesize the migration movements with the relations of macro and micro structures. The whole economy of the world, associations among states and forces at regional, national and international levels are included in the macro structure. The social relations among the workers in home and migrants' destination are included in the micro structures (Castles & Miller, 2003). According to the theory, migratory movements arise in response to prior existence of links between sending and receiving states, such as colonial ties, trade or investment flows (Hagen-Zanker & Siegel, 2007).

Migration systems theory places much importance to the structure of the world market, especially on the influence exercised by capitalist relations on non-capitalist peripheral societies through the actions of the multinationals, governments and other organisations. International migration occurs because land, labour, capital and raw materials fall under the influence of market control. According to this theory, international migration is a consequence of globalization and dissemination into markets, since modern capitalism has brought in its wake, a huge mobile work force in search of better job opportunities.

The main critique of the migration systems theory is that it is purely descriptive and unable to account for the decline of migration systems overtime. In addition, the theory does not distinguish between the different conditions prevailing in each sending society and how those conditions affect migration patterns (De La Garza, 2010).

The New Economics of Labour Migration (NELM)

The new economics of labour migration (NELM) theory has come to challenge some of the assumptions of the neoclassical approach, offering a new level of analysis and different nature of migration determinants. It has shifted the focus of migration research from individual independence to mutual interdependence (Stark, 1991). According to this theory, the decisions of migrants are influenced by a comprehensive set of factors which are shaped by conditions in the migrants' home town or country. Thus, migrant decisions are based on a household response to both income risk and to the failures of a variety of markets and not on individual utility-maximizing calculations (Massey et al., 1993). A household member migrates to a non-correlated labour market due to market failures in the migrant's home town or country, entering a type of co-insurance agreement with the household left behind.

The NELM considers a family as a single unit. This single unit of family is used in the analysis for migration and the individual migrant worker is considered a subset of the family. The costs and benefits of the migration decision are shared with the migrant and his or her whole family. Families benefit from the income generated from different sources. This phenomenon is considered as a form of co-insurance. This theory does not reduce the importance of individual activity in decision-making for migration. The actions and performances of an individual could be explained in the framework of decision-making unit with his or her whole family (Stark, 1991). The NELM theory has established a unique relation with analytical approach of migration from an economic viewpoint and the more sociological perspective in which human behaviour has been examined. Therefore,

remittances among families are integral to migration according to the new economics of labour migration.

Even though to a large extent, the NELM is able to analyse in parallel the determinants and effects of migration, it has been criticised for its limited applicability due to difficulties in isolating the effects of market imperfections and risks from other income and employment variables. Overall, the theory has not received much following or empirical testing and has also been criticised for overlooking dynamics within households (i.e. gender roles) and being so much future oriented (Faist, 2000).

Trans-Nationalism Theory of Migration

Transnationalism is defined as the processes by which immigrants forge and sustain multi-stranded social relations that link together their societies of origin and settlement (Basch, Schiller, & Blanc, 1994). The transnationalism theory is viewed in the light of expanding globalization, rapid communication system and modern technologies adopted by various countries. Schiller et al. (1995) state that trans-nationalism entails methods in which immigrants form and maintain dimensional social associations that connect with their home as well as host countries. The availability of these modern technologies makes it possible for migrants to be able to connect with their family members back home.

Although the concept of transnationalism has gained attention in academia, it has also raised criticism. Thus, critiques have questioned its extent, its novelty and its theoretical strength. For some authors, the transnationalism theory of migration is weak in theory.

World Systems Theory

Building on the work of Wallerstein (1974), the world system theory of migration links the determinants of migration to structural change in world markets. It views migration as a function of globalization, the increased interdependence of economies and the emergence of new forms and methods of production (Skeldon, 1997; Silver, 2003). The theory takes a historical structural approach, stresses the role of disruptions and dislocations in peripheral parts of the world, as a result of colonialism and the capitalist expansion of neoclassical governments and multinationals. Migration, according to this approach, is the inevitable result of the problems that are created by capitalist development. Thus, migration follows the dynamics of market creation and structure of the global economy.

The expansion of export manufacturing and export agriculture linked strongly to foreign direct investment flows from advanced economies to semi-developed or emerging economies has led to a disruption in traditional work structures and has mobilized new population segments into regional as well as long distance migration. Thus, capital mobility is considered a crucial factor for the world system theorists. The theory presents capital and labour mobility as interconnected and as two sides of the same coin. While migration is a natural outgrowth of the disruptions and dislocations that inevitably occur in capitalist development and can be observed historically, the theory also brings in global political and economic inequalities (De Haas, 2008).

The study of international migration in the recent years has lost a lot of the world systems or global development perspective that was present in the earlier works. This perhaps is due to the fact that it is difficult to derive a set of

testable hypotheses and the character of this framework is strongly descriptive because it emerged as *ex ante* formulation of empirical facts (Favell, 2008; Bijak, 2006).

Dual Labour Market Theory of Migration

Dual labour market theory, like world system theory, links migration to structural changes in the economy but explains migration dynamics with the demand side (Massey et al., 1993). Developed by Piore (1979), dual labour market theory posits a dual pattern of economic organization in advanced economies. The theory argues that migration is driven by conditions of labour demand rather than supply. The economic situation in advanced countries creates a demand for low-skilled jobs which domestic workers refuse to take up due to, for example, status. In other words, the theory explains migration as the result of a temporary pull factor, namely strong structural labour demand in developed countries. According to Piore (1979), there are three explanations for the demand for international workers in the modern industrial societies.

First, there are general labour shortages. This requires filling the base positions in the job hierarchy, and labour shortages in the secondary segment of a dual labour market. General labour shortages lead to vacancies at the bottom positions in the job hierarchy.

Second, there are specific shortages at the bottom of the job hierarchy arising from motivational problems. Motivational problems arise because jobs at the bottom of the hierarchy are often associated with low social status and because the opportunities for upward mobility are low.

Third, demographic and social changes such as the decline in birth rates and low educational expansion in modern societies are the causes of a

high demand for international workers. Thus, as a result of labour shortages at the bottom of the job hierarchy, employers are compelled to recruit foreign workers. This often leads to an increase in the inflow of young workers who are willing to take jobs at the bottom of the hierarchy to attain experience and earn money.

The primary segment of labour market is characterized by capital-intensive method of production and labour-intensive method of production takes place in the secondary segment. Skilled workers in the primary segment occupy higher social status because they are trained to work with advanced capital. They have higher income and better employment conditions than unskilled workers in the secondary segment. Jobs at the bottom of the labour market are found in the secondary segment. Employment in the secondary sector fluctuates according to the economic cycle, making it unstable and uncertain work, again unattractive to native workers.

One critique of the dual labour market theory is that it excludes sending countries and overemphasizes formal recruitment practices. It is unable to account for differential immigration rates in countries with similar economic structures.

Network Theory of Migration

The network theory of migration looks at what perpetuates migration in time and space (Massey et al., 1993). According to the authors, the network theory argues that: "acts of migration at one point in time systematically alter the context within which future migration decisions are made, greatly increasing the likelihood that later decision makers will choose to migrate". Governments can do little to solve this situation, because "network formation

lies largely outside their control and occurs no matter what policy regime is pursued. The network theory also helps to explain the reasons why migration patterns are not evenly distributed across countries and cities.

Even though the network theory gives an an insight into why people migrate, it is associated with a number of limitations. First, although it explains why migration patterns perpetuate, it does not explain why migration starts in the first place. Second, it does not clarify why, given the availability of networks and the pressures of economic factors, some persons choose to migrate and others to stay. The third limitation is that the theory does not leave room for policymaking because it argues that governments cannot solve the emigration problem once it is institutionalized (De La Garza, 2010).

The Effect of Migrants' Remittances on the Country of Origin: A Theoretical Analysis

The multidimensional aspect which characterises migrants' remittances income into the country of origin leads to a series of paradoxes related to their micro- and macroeconomic effects on the well-being of households and individuals who receive them and on the regions and communities in these countries.

The current issue on the effect of the migrants' remittances on their countries of origin can be explained by referring to divergent ideological visions represented by two main schools of thought (Jones, 1998).

The Functional School

The functional school adopts a socioeconomic approach. Its advocates underline that migrants' remittances into their countries of origin contribute to the economic wellbeing of households and the economic performance of the

country. These remittances also encourage access to finance by small producers leading to the growth of investment at the local level and the reduction of social inequalities. These positive effects can extend in the most disadvantaged and poor areas, through the multiplier effects (Stark, Taylor, & Yitzhaki, 1988; Taylor, 1992; Aggarwal, & Peria, 2006; Mora & Taylor, 2006).

The Structural School

The structural school adopts a purely economic approach. Its proponents argue that migrants' remittances encourage consumption by the recipient families, which is detrimental to savings and investments. Thus, these families become dependent on the migrants' remittances. Besides, these remittances can support the pension economy which influences negatively the competitiveness of local production units in overseas markets, and cause a long-term economic decline and greater social inequalities (Portes, 1978; Mines, 1981).

Channels in Remittance Flows

Channels in remittance flows are grouped into two: informal and formal. Informal remittances are all types of money transfer services that do not involve formal contracts, and hence are unlikely to be recorded in national accounts. Formal channels include money transfer services offered by banks, post office banks, non-bank financial institutions, and forex bureaus and money transfer operators like Western Union and MoneyGram.

Globally, studies indicate that informal channels are cheaper than formal ones. Informal channels include cash transfers based on personal relationships through business people, or carried out by courier companies,

friends, relatives or oneself. The pure monetary cost (transaction cost) of remitting money across borders using the official channels is estimated at approximately 13% of the remittance value (Orozco, 2003).

The choice of migrant for remitting money depends on a number of factors. The most important and prominent among these are: the cost of the transaction, speed, security of funds, geographic proximity/accessibility, convenience in terms of familiarity and language. The attractiveness of formal and informal channels differs greatly across these factors (Pieke, Van Hear, & Lindley, 2007).

Orozco (2003) estimates the cost of a Hawala/Hundi transaction to be less than 2% of the value of the principal. For the informal remittance channels as a whole, Sander, (2003) reports the average cost of remitting at 3-5% globally, although they can be higher in specific cases. Swanson and Kubas (2005) report transaction costs from less than 1-5%. Also, remittances through friends, taxi drivers, etc are also low-cost channels compared to the formal channels. For instance, in a survey conducted in South Africa, remittances up to R250 to neighbouring countries cost R25 and R50, through friends and taxi drivers, respectively, as compared with over R100 through registered banks and over R80 through money transfer agents like MoneyGram and Western Union (Analytics, 2003).

In a related study, Siddiqui and Abrar (2003) find that costs of informal channels in Bangladesh are about 45% of formal costs. Apart from the general perception and anecdotal evidence of low cost of informal remittance channels, not much is known about how these costs vary with the amount transferred and the geographical location of the senders and receivers.

Formal remittance channels are typically more expensive, especially banks and money transfer operators (MTOs) like Western Union and MoneyGram. At times the cost of remitting small amounts can be prohibitively high due to a minimum fee charged by most service providers. According to Sander and Maimbo (2005), fees for major MTOs start at about $15 and are usually structured by brackets of transfer values. Similarly, minimum fees at banks range from $5 to $50 depending on the sending and receiving countries as well as the product. Due to minimum fees, the average cost declines sharply as the amount remitted rises. In Ghana, MTOs start at GH 1 for domestic transfers and are structured by brackets of transfer values.

Informal channels are typically faster and more convenient as they are not constrained by banking and foreign exchange regulations. They often work in close proximity to their clients and frequently provide door-to-door services. Unlike banks, informal channels do not require the customer to have a bank account or any knowledge about operating one.

Gender and Preferences in the Use of Remittances

Decisions regarding the use of remittances often depend on which family members have migrated and which family members are left behind to control and allocate family resources. The extent to which remittances will have a significant effect on children left behind may depend on the gender of the de facto head of household (the parent left behind with children). The effect may be different according to gender patterns. This is because decisions regarding remittances allocation often differ between mothers and fathers. Even if both of the parents genuinely seek to maximize their children's future well-being, some parents may prefer to invest in physical assets and the

expansion of family business and farming activities, while others may prefer to invest in their children's education.

Rahman and Fee (2009) find that among temporary migrants from Indonesia to the Asian tigers and Malaysia, female recipients used remittances to invest in human capital, whereas male recipients invested more in physical capital. In contrast, the patriarchal nature of Albanian society dictates that a power structure of in-laws (particularly the father-in-law and brothers-in-law) based in the husband's household often determines how women's remittances are spent. Thus, even when female migrants remit, they have relatively little control of the uses of these remittances.

Drawing her data from the Mexican Migration Project, Malone (2007) tests the relevance of differences in the preference for educational investments between male and female parents and concludes that remittances improve children's educational attainment via their positive income effect primarily when fathers send remittances. The absence of fathers makes mothers to assume more power, thereby allowing them to allocate the remittances toward their children's education. Various studies have confirmed this hypothesis, that mothers spend a greater portion of household remittances on children and investment in human capital than fathers do. For example, in a study on the expansion of social pension program in South Africa, Duflo (2003) finds that the impact on child nutrition varied according to the gender of the head of the household.

There is undoubtedly an increase in the global feminisation of labour migration and this is likely to adversely affect the education of children left behind if asymmetric preferences between males and females continue to

exist. Husbands left at home may prefer to direct only a small part of that income towards the education of children even if their wives decide to send a substantial percentage of their earnings home (Curran & Saguy, 2013). Similarly, Pfeiffer and Taylor (2008) find that, in Mexico, households with female migrants are associated with less spending on education than those without female migrants, while it is not the case for households with or without male migrants. The authors are of the view that it is due to the migrant women's limited monitoring over household budget allocations, or also low-skilled jobs abroad send a signal of low returns to migration work.

Thus, migrant women have to find a way to maintain their roles in deciding how to allocate their remittance income. For instance, migrant Filipino mothers often remit to the eldest child instead of the father, and remain involved in expenditure decision (Parreñas, 2005). Generally, female migrants seem to behave more altruistically than male migrants, and they also react more strongly to the effect of remittances on their families left behind.

Child Labour: Theoretical Literature Review

To better grasp the effect of child labour on the wellbeing of children, it is important to understand the factors responsible for the prevalence and perpetuation of child labour. The negative relationship that exists between child labour and schooling has been formally modelled in the theoretical literature. According to the quality-quantity trade-off model, the fall in the number of children in the family frees resources available to increase child quality (Brown, Deardorff & Stern, 2002). First of all, parents choose the number of children they want to have and then decide whether to invest in the quality of the child or send them to work as child labourers. In this regard,

parents who choose a large number of children are less likely to invest in quality schooling. That is, the number of children and investment in the human capital of children are substitutes.

Another theory associated with child labour is the Poverty Hypothesis. At the macroeconomic level, it is a commonly held view that child labour is fundamentally a by-product of poverty (Carpio *et al.*, 2016). In making child-employment decisions, parents weigh the present discounted value of the future income of an educated child against the foregone income while the child is in school. Child labour is only chosen if the return to education is not high enough to compensate families for the lost income of their children.

Many theoretical models have stressed the role of capital market failure in promoting child labour. If parents do not have access to credit markets, one of the options available to them is to rely on their children as assets. In the child-labour scenario, parents borrow from the future by putting their children to work rather than investing in human capital that will make their children more productive in the future. The intuition here is that child labour creates a trade-off between current and future income. Putting children to work raises current family income, but it also reduces future income because of the interference with children's human capital development (Brown et al., 2002).

Again, the household assets play an important role in the child-labour decision. The greater the wealth a family has, the lower the probability of child labour. Also, the presence of older children in the home considerably reduces the probability of child labour (Brown et al., 2002).

Furthermore, the nimble fingers theory has always held the view that children have a comparative advantage in some kinds of occupation. That is, children are more suitable labourers than adults for some occupations. More recently, however, important studies have refuted the theory. Anker, Barge, Rajagopal and Joseph (1998) refute the nimble fingers theory, and note that non-pecuniary and non-economic factors are often very important reasons why employers hire children.

While most economists have argued that poverty increases the incidence of child labour, others consider it rather as a cause of poverty. The argument here is that some children only work but do not go to school and do not also acquire the skills needed to earn decent wages as adults. When the children become adults and do not earn decent wages because of lack of skills, they send their own children to work. When the children also become adults, they send their children to work. This vicious circle is known as a "poverty trap". The poverty trap sets off a legacy of child labour down through the generations (Jafarey & Lahiri, 2001).

It is clear from the above discussion that many factors play a role in the overall determination of child employment. Fundamentally, child labour is not driven by any single factor or cause. While it is true that poverty increases the incidence of child labour, it is also the case that child labour increases when employment opportunities present themselves. In view of this therefore, a comprehensive approach is required to tackle and combat the child labour menace.

Child Health: Theoretical Literature Review

The theory that is specifically geared toward children is the public health prevention model. This model places emphasis on multiple layers of supports and services aimed to decrease risk factors and reduce disorders, in order to promote better outcomes (Kazak, 2006). The prevention framework allows for greater efficiency in how service delivery is organised, delivered, and funded. It comprises primary prevention, secondary prevention and tertiary prevention. Primary prevention refers to efforts which target all children. It is the action taken prior to the onset of disease, which prevents the possibility of the disease ever occurring.

Secondary prevention is more intensive and is targeted towards populations which are at risk. It refers to action which halts the progress of a disease at its initial stage and prevents complications. Secondary prevention attempts to arrest the disease process and also reverse communicability of infectious diseases. Finally, Tertiary prevention is considered to be the most intensive support within the prevention model, and intended for children who are already experiencing significant health problems. Tertiary prevention is used when the disease process has advanced beyond its early stages.

Although the public health prevention model emphasizes a foundation of supports and services aimed to foster the healthy growth and development of children, it seems to be limited in its applicability. Children's health behaviours change as they develop and mature, and so it is important to develop a theory that focuses comprehensively on these changing behaviours.

Chid Education: Theoretical Literature Review

There is a large literature on theories that relate to child education and most of these theories are discussed below.

The constructivist theory of child education and development relies heavily on logical mathematical knowledge and universal invariant stages of development to the neglect of other forms of development. The theory focuses mainly on the child's coordination of relationships rather than on socially constructed knowledge (Swadener & Kessler, 1992). Thus, knowledge is constructed from the learner's previous knowledge and so listening to a teacher teach involves active attempts to construct new knowledge.

Another theory used to guide child's education is the ecological systems theory. According to this theory, five systems either directly or peripherally influence child development namely; microsystem, mesosystem, exosystem, macrosystem and chronosystem. In this regard, both environmental and biological factors are thought to shape child development and outcome. Structures in the microsystem include family, school, neighbourhood, or childcare environments. The mesosystem provides the connection between the structures of the child's microsystem. Examples include the connection between the child's teacher and his parents, between his church and his neighbourhood, etc.

In the third layer, the exosystem the structures impact the child's development by interacting with some structure in her microsystem (Berk, 2000). At this level, the child may not be directly involved but he does feel the positive or negative force involved with the interaction with his own system. The macrosystem comprises of cultural values, customs, and laws and the

effects of larger principles defined by this layer have a cascading influence throughout the interactions of all other layers (Berk, 2000). Finally, the chronosystem encompasses the dimension of time as it relates to a child's environments. Elements in this system are either external or internal and these include the timing of a parent's death, the migration of a parent and the physiological changes that occur with the aging of a child (Ryan, 2001).

Another child education theory worthy of mention is the multiple intelligence theory. This theory suggests that teachers can use children's type of intelligences to assist in planning and teaching in areas in which the children do not perform well. The multiple intelligence theory shows promise in developing appropriate practices to children who do not perform well in the math or linguistic areas.

The behaviourist theory emphasizes the role of the environment in the development of the child. It is a learning theory that focuses on observable behaviour. Thus, actions rather than thoughts are the legitimate object of study. The theory heavily relies on teacher- directed activities Skinner, 2011).

In contrast, the maturational theory takes the stance that environment has no effect on a child's development. Thus, if a child suffers from any developmental problem, it is believed that the problem lies within the individual child and not related in any way to the child's environment or circumstances. The theory is based primarily on biology and heredity.

The cognitive theory suggests that child's development is centred on a child's cognitive development and so children go through a process from simple to more complex cognitive ability. An implication of the theory is the need for children to be active in exploring the world around them.

Finally, another important child education theory is the psychoanalytic theory. This theory is based on the idea that a child's behaviour is greatly determined by unconscious desires in the child Behaviour problems displayed by the child are seen as symbolic manifestation of unresolved conflict, often emanating from early care-giver interactions (Hinshaw, 1992).

All the above-mentioned theories of child education have their individual weaknesses. For instance, one important weakness of the psychoanalytic theory is that there is an inherent allocation of blame on parent-child interactions. Merely placing all the blame on the parent may not be telling the entire story. The constructivist theory on its part, does not address the needs of individual children. Similarly, the ecological systems theory also has its weakness. It is for instance, difficult to have enough information about children's activity levels or learning capacities as they relate to the different systems. With respect to the multiple intelligence theory, children from poor socio-economic areas may not have many opportunities to explore even if some these areas are areas in which they might thrive. Besides, schools and teachers particularly, in developing countries including Ghana are not equipped equally to deal with multiple intelligences. Finally, the cognitive theory tends to ignore maturation and developmental stages over a lifetime. It does not explain how personality changes over time.

Even though each one of the theories of child education may have some challenges, they all make important contributions to how, people understand the way children develop and learn. Thus, no one theory addresses all aspects of child development. For that reason, teachers need to understand

how individual children behave, then they will be able to know how best to shape their development.

Empirical Literature Review

The results from many of the studies on the effect of remittances on child welfare across the world have been quite insightful with mixed results. Whiles some studies produce evidence of considerable impacts, others indicate marginal and insignificant impacts. This section reviews empirical literature on remittances and child labour, remittances and child health, and remittances and child education.

Remittances and Child Labour: Empirical Literature Review

In many developing countries including Ghana, children work and also attend school. Some of the typical child work activities include family business, farming and other part-time jobs. While these activities are beneficial in the short run, for households in order to obtain some income for their upkeep, they certainly disrupt the acquisition of human capital for future generations. For example, Alcaraz, Chiquiar, and Salcedo (2012) find that a reduction in remittances from the U.S. to Mexican households can cause an increase in child labour and a decrease in school attendance of children. In a similar study by Ebeke (2010), there is significant evidence that an increase in remittances as a share of GDP is associated with a reduction of the share of the 10–14-year-old population actively engaged in work. The study also finds that remittances have a stronger effect on the reduction of child labour in countries where credit constraints are higher and GDP growth more volatile.

Again, Acosta (2011) finds that remittance receipt significantly reduces the likelihood that children will engage in paid labour in El Salvador.

Epstein and Kahana (2007) argue that the reduction of the amount of labour available in the aftermath of migration and the remittances sent by emigrating parents may enable not only the children, but also other family members to stop working. The wage increase emanating from the fall in labour supply may then make it possible for parents to withdraw their children from the labour force.

Joseph and Plaza (2010), also focusing on Ghana, examines whether international remittance receiving households behave differently from domestic remittance receiving households and households that do not receive remittances with regard to the decision on sending their children to work. They find that children belonging to international remittance receiving households tend to work fewer hours than those who belong to households that do not receive remittances.

Using longitudinal data from a balanced panel of 962 households from the two rounds of the Nepal Living Standards Survey (NLSS), Acharya and Leon-Gonzalez (2014) find that remittances can be used to purchase labour-saving equipment, possibly decreasing the reliance on child labour. Again, using data from the 1992/93 and 1997/98 Vietnam Living Standards Surveys, Binci and Giannelli (2012) find that remittances lead to a reduction in child labour.

Finally, using household survey data, Coon (2016) finds that children in remittance-receiving households are less likely to be actively supplying labour, and the number of hours worked per week declines with the size of remittances received.

The underlying assumption in all of these studies is that remittances help reduce liquidity constraints and increase household income sufficiently to reduce the need for child labour. It is, however, important to note that it is not all studies that find uniformly positive results. For example, while Acosta (2011) finds that remittances are associated with a decrease in wage labour, he also finds that remittances tend to increase the prevalence of domestic labour. Essentially, what this suggests is that remittances simply lead to a reallocation of child labour from paid to unpaid work. Similarly, in a study on El Salvador, Calero, Bedi, and Sparrow (2009) find that remittances only reduce the incidence of paid child labour among rural and non-poor households. However, in urban households, remittances increase the incidence of domestic labour.

Other studies indicate that migrant remittances have no significant effect on child labour. For example, using data from Vietnam Household and Living Standard Surveys in 2006 and 2008, Nguyen and Nguyen (2013) estimated the effect of the receipt of international remittances and internal remittances on child labour in Vietnam. The result shows that there is no statistically significant effect of receipt of remittances on child labour.

All these studies tend to suggest that while increased remittances may benefit the household, family disruption caused by the loss of a working-aged household member to migration may have negative effect on the children left behind. In other words, the absence of a family member through migration may not only increase the number of hours children of the household would work, it may also reduce the number of hours the children spend in school and also reduce the attention for the children. The above-mentioned studies do not,

however, address the gender perspective of the remittances-child labour nexus. The differing results discussed could reflect genuine differences in how remittances are spent in different parts of the world and by different household heads depending on their gender.

Female Headship and Child Labour

According to Bhalotra and Heady (2001), female headship is much more common in households in sub-Saharan Africa than it is in Asia (for example, it is 30% in rural Ghana as compared with 3% in rural Pakistan).

Households with female heads mostly have fewer economic resources. This is because the average education of women is lower, some labour market segmentation (access) or discrimination (wage differentials), and also women often face sharper credit or other constraints. Support for the hypothesis that children of female-headed households are more likely to work and less likely to be in school is found for Paraguay in Patrinos and Psacharopoulos (1995). A study by Grootaert (1998) also finds that for rural Cote d'Ivoire, children in female-headed households are more likely to work. Bhalotra and Heady (2000) find a positive effect of female headship on work hours for both boys and girls in rural Pakistan.

In the case of rural Ghana, the authors find a positive effect restricted to girls. Using the same Ghana data but pooling information on boys and girls, Canagarajah and Coulombe (1997) find an insignificant effect of female headship on child labour. The headship of household was found to rather affect schooling.

Remittances and Child Health: Empirical Literature Review

There are few studies linking remittances with health. Migration and remittances can affect health and mortality in different ways: by changing individuals' and communities' resources and investment patterns, altering social and family networks, and also providing information on health and life styles. These health issues encompass some of the main indicators of the accomplishment of the health millennium development goals.

Remittances can contribute to better health outcomes by enabling household members to purchase more food and health care services and perhaps by increasing information about health practices. A cross- country analysis of 56 developing countries by Drabo and Ebeke (2010) finds that higher remittances per capita were associated with greater access to private treatment for fever and diarrhoea and that remittances complemented foreign health aid in poor countries.

Similarly, Hildebrandt, McKenzie, Esquivel, and Schargrodsky (2005) investigate the impact of international migration and remittances on child health outcomes in rural Mexico using a 1997 nationally representative demographic survey. The authors find that children in remittance receiving households have lower rates of infant mortality and higher birth-weights than those in non-remittance receiving households. Again, using Mexico's 2002 wave of the *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH) Amuedo-Dorantes and Pozo (2011) indicate that international remittances raise health care expenditures. Approximately 6 pesos of every 100 peso increment in remittance income are spent on health.

Also, using a representative sample of Mexican household, Frank and Hummer (2002) find evidence of improved health outcomes- measured as higher birth weights- for all households that receive migrant remittances relative to non-remittance receiving households. Similarly, Córdova (2006) dealt with the potential endogeneity of migration using the product of historic migration rates to the United States at the state level and the distance to the American frontier as instrumental variable (IV) and finds that migration and remittances measured at municipality level are associated with lower rates of infant mortality. Levitt (1997) argues that remittances relieve liquidity constraints that might otherwise constrain health care use and may result in improved health.

In a similar study, Kanaiaupuni and Donato (1999) argue that Mexican communities with higher levels of emigration face higher rates of infant mortality, though higher remittances are associated with lower risks of mortality. Using a hierarchical linear model at the individual and community levels over time, the authors consider emigration as a cumulative process with varying health effects at different stages of its progression. The authors find evidence that, despite the initial disruptive effects of family separations, over time, as the household begins to receive remittance income, infant mortality significantly drops. According to the authors, communities with persistent emigration for at least 20 years and those that received at least US$10, 000 in annual remittances exhibited lower infant mortality rates.

Using nationally representative household surveys, Acosta, Fajnzylber and Lopez (2007) suggest that children in remittance-receiving households exhibit better health outcomes than children in non-remittance receiving

households in Guatemala and Nicaragua. Similarly, Valero-Gil (2009) uses IV Tobit with random effects and finds a statistically significant effect of remittances on the proportion of health expenditures for households that do not have access to employment's medical insurance in Mexico. Again, in carrying out a cross section analysis of 84 countries, Chauvet, Gubert, and Mesplé-Somps (2009) find that remittances reduced overall child mortality but tended to be more effective in reducing mortality among children from the richest households than from the poorest households.

In a related study on Pakistan, Mansuri (2007) finds that remittances have a positive and significant effect on child health, including a gender-equalizing effect. Mora and Taylor (2006) investigate the impact of international and internal remittances on rural household expenditure using a Mexican data set. They find that international remittance- receiving households have a larger marginal budget shares for investments, health, and consumer durables, and small budget shares for food and housing. Households with internal migrants have larger marginal budget shares for health, housing, services and education. Using data from the Equator's 2004 National Demographic and Maternal and Child Health Survey (ENDEMAIN), López-Cevallos and Chi (2012) conclude that remittances seem to have an equalizing effect on access to anti-parasitic medicines, and to a lesser extent, curative health care services.

The evidence on the effect of remittances on health outcomes is rather sparse for Africa. Guzmán, Morrison, and Sjöblom (2008) use the GLSS4 data and an intra-household bargaining framework to investigate the impact of gender of remittance recipients and senders on the patterns of expenditures.

They find that female-headed household that receive remittances (within Ghana and internationally) spend more on education, health, housing, and durable consumer goods compared to non- remittance receiving female household heads or their male counterparts. In a similar study, Kabki, Mazzucato, and Appiah (2004) argue that remittances that most of the Netherlands-based migrants from Ghana's rural Ashanti community send to their home communities are primarily used for medical expenses. Not only are medical expenses paid with money from abroad, but also food, clothing and electricity bills, all of which ensure a higher standard of living.

In rural Mali, households receiving remittances increased demand for health services and were more likely to seek modern care (Birdsall & Chuhan, 1986). Again, using panel data for 1993–2004 for the KwaZulu-Natal province in South Africa, Nagarajan (2009) finds that remittance-receiving households spent a larger budget share on food and health expenditures and also remittances enabled poorer households to access better-quality medical care.

In contrast, Zarate-Hoyos (2004) finds that remittance receiving households have lower average expenditures per household in most spending categories which include food, health, and education. Household expenditure patterns in their Mexican dataset indicate that remittance receiving households invest and possibly save more than non-remittance receiving households. In a similar study, Chauvet, Gubert and Mesplé-Somps (2013) find that remittances decrease mortality, but there is a larger countervailing impact of medical brain drain, which worsens mortality.

Overall, the empirical evidence regarding where the additional income from remittances is spent at the margin is mixed. With the exception of the

evidence presented by Zarate-Hòyos (2004) and Chauvet et al. (2013), the other studies conclude that remittance receiving households are either consuming more health promoting goods like housing and food, or investing in health promoting activities like health and education. However, none of the afore-mentioned studies have specifically focussed on the relationship between remittances and child welfare clinic attendance.

Globally, child welfare clinic attendance is important because there is an immediate compromise of a child's health if the child is not taken to child welfare clinic at least in the first five years after birth (Child Welfare Information Gateway, 2012). Early child welfare clinic attendance by the mother and child is therefore important for identifying, managing and referring babies and reducing deaths.

Remittances and Child Education: Empirical Literature Review

For years, the only academically published attempt to empirically investigate impact of remittances upon school attendance was a study done by Edwards and Ureta (2003) on the risk of school dropout. The authors investigate how remittances influence Salvadorian households' educational choices via an income effect, and find that because remittances somehow reduce the pressure on household budgets, families can afford to have their children spend more time in school. The authors estimated a duration model using cross-sectional data drawn from Encuesta de Hogares de Propósitos Multiples 1997. It was further established in the study that remittances significantly reduce the drop-out rate of individuals aged 6 to 24. The study by these authors appears to be consistent with the expectation that remittances contribute positively to school attendance. Their findings suggest that

subsidising school attendance, particularly in poor areas, may have a large impact on school attendance and retention, even if parents have low levels of schooling.

Similarly, a study by Hanson and Woodruff (2003) reports a better educational outcome for remittance receiving households. Their study shows that girls who have mothers with less than 3 years of education and belong to a remittance receiving household complete an extra 0.23 years of schooling. This result coincides with the study by Córdova (2006), who finds a positive correlation between remittances and education using a cross-section of Mexican municipalities. The author's study shows that an increase in the fraction of households that receive remittances leads to a decrease in illiteracy and an increase in school attendance for children between 6 and 14 years old. Again, using household level evidence from the Philippines in their study on educational inequality in rural Mexico, Yang and Martinez (2006) find that a 10% increase in remittance flows lead to a 1.7% increase in school attendance. Their study shows that one standard deviation increase in the size of the exchange rate shock to migrant's income leads to a differential rise in the probability of being a student of 1.6% and a differential decline in hours worked in the past week of 0.35 hours.

These conclusions coincide with a study by Gubert (2007) which finds that in Mali, remittances alleviate poverty and encourage human capital formation. His study is based on a spacially-clustered non-random sample of 305 rural households in eight villages in Mali.

Using cross-sectional data from the 1993-1994 Integrated Household Survey and panel data from 2002 and 2003 South African Labour Force

Survey, Lu and Treiman (2007) find that receipt of remittances by households substantially increases the likelihood that children are in school, through three pathways: increased household educational spending, reduced child labour, and mitigation of the negative effect of parental absence due to out-migration. Similarly, Yang (2008) exploits the 1997 Asian .financial crisis as an experiment to identify the impact of remittances income shocks on educational choices and other outcomes of Philippine households and .finds that an increase in international remittances leads to an increase in private educational expenditure. The author finds that an increase in the receipt of international remittances due to favourable exchange rate movements in the Philippines increases child schooling and educational expenditure, whilst reducing child labour. The appreciation of a migrant's currency against the Philippine peso is interpreted as a positive income shock channelled through an increase in remittance flows to the origin household.

Overall, the findings show that more favourable income shocks lead to an increase in child schooling. A study by Bryant (2005) finds that in the Philippines, remittances are used to send children to private schools, considered superior to public schools. He suggests that children in left behind households have a higher probability of attending private schools, and that on average they get better grades than children in non-remittance receiving households. Similarly, a study on the impact of remittances on education in Dominican Republic by Amuedo-Dorantes and Pozo (2010) shows that among children in remittance receiving households; remittance income may help neutralize the disruptive effect of household out-migration on children's educational attainment. In their research on Moldova, Görlich, Omar

Mahmoud and Trebesch (2007) indicate that the boom in university enrolment rates, which has been observed in Moldova in recent years, might partly be explained by the sharp rise in migration and remittance flows.

A study by Mara, Narazani, Saban, Stojilovska, Yusufi and Zuber (2012) shows that parental experiences of migration have an important effect on the educational attainment of children in both Albania and Macedonia, whereas remittances only have a significant effect on the education status of children in Albania. The results of this study demonstrate that, in the case of Albania, having a migrant parent and remittances more positively affect the education of girls than of boys. This difference in the case of Macedonia is insignificant.

Using data from the 1992/93 and 1997/98 Vietnam Living Standards Surveys, Binci and Giannelli (2012) investigate average school attendance in remittance recipient and non-recipient households. The results of their cross-section and panel analyses indicate that remittances increase schooling. Adams (2005) uses a large household data set from Guatemala (based on a nationally-representative household budget survey from 2000) to show that remittance-receiving households spend more at the margin on education, than on consumption. Furthermore, he finds differential impacts by level of education. Remittance receiving households tend to allocate slightly more to preparatory and primary schooling, but at the secondary school level they allocate significantly more funds to education than non- remittance receiving households. At the margin, internal and international remittance-receiving households spend 20% and 140% more respectively on secondary education than non- remittance receiving households. Moreover households receiving

international remittances also expend more on tertiary education. Using data from two surveys, Vietnam Household Living Standard Surveys (VHLSS) in 2006 and 2008, Nguyen and Nguyen (2013) find that receiving international remittances helps children increase the number of completed grades by around 2% of the average completed grade for children.

Again, using household data for the 2008 *CBSAXA* Moldovan Household Survey provided by the Kiel Institute and by using probit and IV probit estimation techniques, Matano and Ramos, (2013) show that being in a family receiving remittances increases the probability of attaining higher education of around 33% after controlling for several individual and family characteristics.

Mansour, Chaaban, and Litchfield (2011) use a censored ordered probit model and finds a positive effect of remittances on both educational attainment and attendance in Jordan. They identify several instruments for remittances, including the historical district level migration rate, the prevalence of households owning a bank account by region, the number of household members over the age of 50, and the age of the household head. The last two instruments were used because altruism plays a role in determining remittance behaviour, and migrants will send more remittances to care for elderly household members, particularly for medical expenses.

Similarly, using the Working-Leser model, Adams and Cuecuecha (2010) analyses the impact of migrants' remittances on household consumption and investment decisions in Guatemala and they find that households receiving international remittances spend less on food consumption and rather spend more on education and housing. Based on the

same model and applying both parametric and semi-parametric techniques, Göbel (2013) investigates the impact of remittances on household's budget allocation in Ecuador and provides evidence of a positive relationship between remittances and spending on education, indicating that remittance receiving households have a stronger motivation to accumulate human capital.

Again, using a large nationally representative survey data to examine the impact of China's rural–urban migration on high school attendance of left-behind children by disentangling the effect of remittances from that of migration, Hu (2012) indicates that the absence of adult household members has a negative impact on the high school attendance of left-behind children in rural areas, while the remittances can partially compensate for this loss. According to the author, the effects are especially prominent for girls and those children from poor households since girls are usually disadvantaged in rural China and poor households are more likely to be liquidity-constrained.

Just like in other parts of the world, most research findings from Africa indicate the positive impact of remittances on education. In Egypt, Elbadawy and Roushdy (2009) investigate a sample of children who live in remittance-receiving households, while accounting for gender differences and different cohorts, and find that remittances have a positive effect on the school attendance of boys of university enrolment age, while for girls this is true only for those aged from 15 to 17 years. Adams Jr, Cuecuecha, and Page (2008) use a nationally-representative household survey from Ghana (GLSS IV) to analyse, within a rigorous econometric framework, how the receipt of internal remittances (from within Ghana) and international remittances (from Africa or other countries) affect the marginal spending behaviour of households on a

broad range of consumption and investment goods, including food, education and housing.

Contrary to other studies, which find that remittances are spent disproportionately on consumption (food and consumer goods/durables) or investment goods (education and housing), the findings show that households receiving remittances in Ghana do not spend more at the margin on food, education and housing than non-remittance receiving households with similar income levels and characteristics. The possible reasons for their finding include small sample size unable to generate sufficient variation in the variables or the fact that the authors are focusing on a low income country whereas most studies have focused on middle income countries, where households may be more likely to treat different sources of income differently. Even though these findings do not control for the possible endogeneity of remittance- receiving status, they nevertheless suggests that migrant remittances may help raise the level of resources that are channelled to education.

Again, using both cross-section and pseudo-panel data to investigate the effects of remittances on investment in education in Ghana, Gyimah-Brempong and Asiedu (2015) find that remittances significantly increase the probability that families enrol their children in primary and secondary schools, suggesting that remittances increase education and human capital formation. According to the authors, the impact of remittances on the probability of primary and secondary school enrolment is particularly strong for international remittances. In addition, there is evidence that remittances to female-headed

households increase education investment more than do remittances to male-headed households.

Adams and Cuecuecha (2013) used a generalization of the two-stage selection model and find that remittance-receiving households in Ghana spend marginally less on food and more on education, health and housing. Similarly, using data from the 2009 Kenya Migration Household Survey to test this hypothesis, Hines (2014) finds a positive relationship between the amount of remittances a household receives and the level of education expenditures in that household. However, the author does not find a correlation between remittances and the share of total expenditures allocated to education. This implies that the positive relationship between remittances and investment on education related to remittances may be reflecting an income effect, rather than substitution away from other goods.

Yet, a few recent studies show that in some countries, remittances are not put to productive uses and tend to have no positive impact on education. According to Mim and Mabrouk (2014), remittances can also create negative incentives for the education of children, because the parental absence can have a negative impact on the school performances of children. A similar study by Cattaneo (2012) finds that remittances have no impact on education in Albania and ascribes the low share of investment expenditures to the weakness of local education systems.

Again, applying an OLS and an ordered probit framework and controlling for heteroskedasticity, censoring, intra-family correlation, and different measures of remittances, Köllner (2013) find a negative impact of remittances on educational outcomes in Tajikistan. This negative effect of

remittances on education is consistent with Parinduri and Thangavelu (2011) for the case of Indonesia. The authors find evidence that remittances do not increase the quality of the education of children in Indonesia. The fact that one of the parents leaves the house in order to work abroad tends to have a negative impact on human capital accumulation for children.

Although there are some mixed results in the empirical studies of the influence of remittances on education, the majority find that remittance income has a positive effect on the human capital development of households. Part of the differences in these findings may be directly related to the country under study and variation in the returns to education domestically and abroad. In all the studies discussed, however, child education is focussed on primary one to the senior high school thereby, ignoring nursery and kindergarten education. These levels are part of the school structure and should be taken into consideration in the measurement of child education. Children need positive early learning experiences to help their intellectual, social and emotional development and this lays the foundation for later school success.

A simplified conceptual framework for remittances and child welfare is shown in Figure 2. Essentially, migrants receive incomes after working and send part of their incomes back to their households in the form of remittances. Some of these remittances are used to attend child welfare clinics by mothers and this eventually leads to an improvement in the health of the child. Remittances sent back home can also reduce poverty level in the household and reduce the number of hours of child labour. These remittances reduce liquidity constraint in the households and as a result, children are able to spend more hours in school rather than working to increase household income.

Figure 2 shows a conceptual framework of remittances and child welfare. Specifically, it shows how migration gives rise to remittances flow which in turn, influences child labour, child welfare clinic attendance and child education.
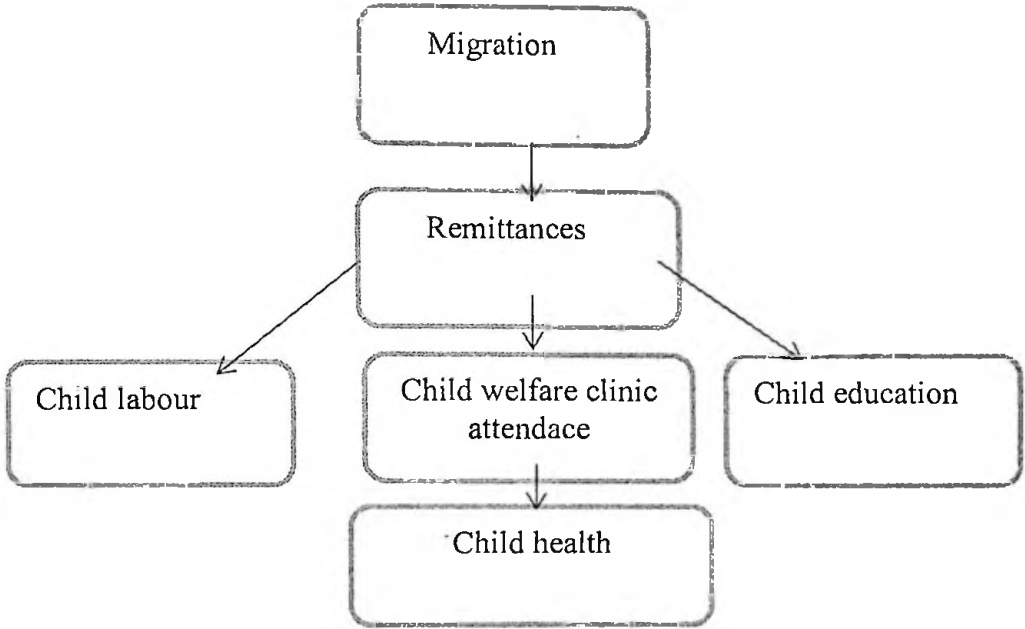
Figure 2: A simplified conceptual framework for remittances and child welfare

Source: Author's own construct, 2016

Conclusion

Previous studies on the effect of remittances on child welfare outcomes have indeed, shown mixed results. Whiles several studies have been conducted in Latin America and Asia, little evidence exists on Africa and for that matter Ghana. Results are also mixed due to methodological differences. With the exception of the study by Joseph and Plaza, (2010), Dimova, Epstein and Gang (2015) and Coon (2016) all the above-mentioned studies on child labour estimate the effects of remittances on child labour by considering whether a child works or not.

While this approach is important, there is the tendency for it to underestimate the full effect of remittances. For instance, if the intention is to discourage child labour so as to send more children to school, then a sufficient reduction in the number of hours worked by the child may have a greater impact than moving a child at the margins completely out of the labour force (Coon, 2016). Thus, in filling the research gap, it is important to focus more on the prevalence of child labour.

Furthermore, from a policy standpoint, it is important to determine whether the gender of the household head has any influence on the number of hours of child labour or not. This investigation is carried out by using the instrumental variable approach to investigate the effect of remittances and the gender of the household head on child labour. This approach is specifically applied to address the endogeneity problem arising between remittances and child labour.

Again, although there are a number of studies on the effect of remittance income on child health, there is no specific study of its effect on child welfare clinic attendance. As far as I know, this study provides the first empirical attempt on the effect of remittances on child welfare clinic attendance in Ghana. This is to assess the extent to which remittances improve child health in the country. To carry out this study, the Poisson regression model is used to obtain the incidence rate ratios of all the explanatory variables included in the model.

Finally, in all the aforementioned studies on the effect of remittances on education, one important thing that is clear is that nursery and kindergarten is often left out in measuring the effect of remittances on child education.

However, it is important to note that these stages are equally relevant in measuring child education. This thesis therefore, seeks to address this methodological issue by including nursery and kindergarten education in estimating the effect of remittances on child education in Ghana. To carry out this investigation, the study uses the instrumental variable approach so as to control for endogeneity biases existing between remittances and child education.

CHAPTER FOUR

RESEARCH METHODS

Introduction

This chapter begins with a description of the research design for the study, the theoretical underpinnings of the study and the estimation techniques used in the study. Finally, the sample design and data source are presented along with the data analysis procedure.

Research Design

According to Creswell (2003), a research design is the scheme, outline or plan that is used to generate answers to research problems. Specifically, it is the overall plan for connecting the conceptual research problems to the pertinent and achievable empirical research. The study was a cross sectional survey that used a quantitative research design and aligns itself to the post-positivist philosophy so as to achieve the objectives outlined in chapter one. This philosophy holds a deterministic philosophy in which causes probably determine effects or outcomes (Creswell, 2012). According to the author, the problems studied by post-positivists reflect the need to identify and assess the causes that influence outcomes such as found in experiments. It is important to state that the post-positivist assumptions hold true more for quantitative research than qualitative research.

Creswell (2009) explains that a research design reflects the purpose of the enquiry, which can be characterised as one or more of the following: exploratory, descriptive and explanatory. The main aim of exploratory research design is to identify the boundaries of the environment in which the problems, opportunities or situations of interest are found. Exploratory

research is mostly very flexible but it, however, lacks formal structure. Descriptive research for its part, aims at providing an accurate and valid representation of the variables that are relevant to the research question. Finally, explanatory research design aims at identifying a causal link between the variables that are relevant to the research question.

A research design can either be qualitative, quantitative or a combination of both quantitative and qualitative methods (mixed methods). Morse (2010) writes that despite their growing popularity, there is not widespread agreement on exactly what constitutes a mixed methods study. However, qualitative research methods focus on discovering and understanding the experiences, perspectives, and thoughts of participants (Byrne, 2001). Qualitative research is especially useful when the researcher does not know the important variables to examine. It involves an interpretive, naturalistic approach to the world (Denzin & Lincoln, 2008).

On the other hand, Creswell (2009) defines quantitative research method as a means for testing objective theories by examining the relationship between variables. Quantitative methods are generally described as deductive in nature, because inferences from tests of statistical hypotheses lead to general inferences about characteristics of a population.

Effect of Remittances and Gender on Child Labour - Theoretical Framework

The theoretical framework for this study employs the model proposed by Basu and Van (1998) and adopted by Coon (2016). The study assumes that the parent ultimately decides the optimal child labour decision for the

household. Utility is maximised by parents with respect to consumption and their children's leisure. Thus, we have the following

$$u(c,e) = \begin{cases} (c-s)(1-e) & \text{if } c \geq s \\ c-s & \text{if } c < s \end{cases} \qquad (4)$$

Where c represents consumption, e is each child's labour effort level and $e \in [0,1]$. s is a parameter representing the minimum subsistence level (i.e. the household's needed level of consumption). It is only after achieving s will the household consider children's education. Thus, if s is very high then child labour effort will be equal to 1 ($e=1$). The household's budget constraint is stated as follows:

$$nc + m\beta c = mew_c + nw_a + r \qquad (5)$$

Where n represents the number of adults in the household, m is the number of children in the household and each child consumes $\beta(<1)$ proportion of what an adult consumes. w_a and w_c represent the wages paid to adults and children in the household respectively. The amount of remittances to the household is represented by r. For the case where c $\geq$ s, the optimal allocation of children's effort is given as:

$$e^*(w_a, w_c, m, n, r, gr) = \begin{cases} 0 & \text{if } s(n+m\beta) + mw_c \leq nw_a + r \\ 1 & \text{if } s(n+m\beta) - mw_c \geq nw_a + r \\ \dfrac{s(n+m\beta) + mw_c - nw_a - r + gr)}{2mw_c} & \text{otherwise} \end{cases}$$

$$(6)$$

The gender of the household head that receives remittances is represented by gr. Partially differentiating equation (6) with respect to w_a, w_c, r, gr, n and m gives the following:

$$\frac{\partial e^*}{\partial w_a} = \frac{-n}{2mw_c} \qquad (7)$$

$$\frac{\partial e^*}{\partial r} = \frac{g-1}{2mw_c} \qquad (8)$$

$$\frac{\partial e^*}{\partial n} = \frac{(s-w_a)}{2mw_c} \qquad (9)$$

$$\frac{2e^*}{\partial m} = \frac{nw_a + r - ns}{2w_c m^2} \qquad (10)$$

$$\frac{\partial e^*}{\partial w_c} = \frac{n(w_a - s) + r - sm\beta - gr}{2mw_c^2} \qquad (11)$$

As adult wages and remittances to the household increases, child labour is expected to reduce and this is shown in equations (7) and (8) respectively. Equation (9) gives the change in optimal child labour effort with respect to the number of adults in the household. This implies that when the adult wage is less than the minimum subsistence level, there will be a reduction in child labour and when the adult wage is greater than the minimum subsistence level, child labour increases. Furthermore, a large enough increase in remittance income received by a household takes a child completely out of the labour market. When wages are greater than the subsistence level of consumption, migration and remittances reduce child effort only if $r > (w_a - s)$. That is, if remittance income to the household is very small, such that they do not offset the loss of the adult wage due to migration, then migration can increase child labour. Thus, a utility maximizing household

would not send a member abroad in this case unless they expected remittance income to offset the loss of domestic income.

The change in child labour effort with respect to an increase in the number of children is expressed using equation (10). In households where the adult income exceeds subsistence, increasing the number of children increases child labour effort.

There are both income and substitution effects determining the supply of child labour and this is indicated in equation (11). When total child subsistence, $sm\beta$, is greater than adult surplus income, $(w_a - s)n + r$, child labour decreases with an increase in the child wages. On the other hand, when adult surplus income is greater than the child subsistence level, child labour increases with an increase in child wages. Thus, child labour can be encouraged by increasing the child wage rate.

Empirical Model and Estimation Techniques I

This section explains the empirical strategy employed in investigating the effect of remittances and the gender of household head on child labour in Ghana. Given that migration is often recurrent, some women may be effectively left in charge of their households for long stretches of time. Most migrants are also relatively young married men with children, so their wives are likely to preside over labour decisions for their children. It is this aspect of female headship that is pertinent to the concerns of this study.

For the purpose of this study, children between the ages of 5 and 14 years are considered. The ILO Conventions 138 and 182 categorise child labour as engagement by children less than 15 years (except in the case of hazardous work where the age limit is 18 years) in work activities outside the

house for at least two hours per day or fourteen hours per week and double the number of hours for domestic activities.

Specification of the Empirical Model

The econometric model is designed to test the preceding theoretical framework in which it has been indicated that remittances are important in shaping child labour supply by the household, hence child labour depends on remittances. It is also assumed that the household head ultimately decides the number of hours a child in the household works. Following Bargain and Boutin (2014), the child labour supply function used to investigate the effect of remittances and the gender of the household head on child labour is stated as follows:

$$hours\_chd_{ij} = \beta_0 + \beta_1 R_j + \beta_2 X_j + \varepsilon_j \qquad (12)$$

Where $hours\_chd_{ij}$ represents the number of hours worked per week by the child labourer i in household j, and R_j is the log of remittances amount. The sign of the remittance coefficient directly tests the theories on household-child labour decision. A negative coefficient suggests that remittances reduce the number of hours a child in a household works. X_j is a vector of household characteristics related to the household head (age, gender and level of education) or to the household (income without remittances, size, location and region). It has been argued in the literature that these characteristics have a strong effect on the schooling and work patterns of children (Milligan, 2009; Binci & Giannelli, 2012). The mean zero error term ε_j captures the effects of unobserved factors common to a given household. Equation (12) is rewritten as

$$hours\_chd_{ij} = \alpha_0 + \alpha_1 gender \times remit_j + \alpha_2 \ln rem_j +$$
$$\alpha_3 gender\_head_j + \alpha_4 agey_j + \alpha_5 hhsize_j + \alpha_6 employed_j +$$
$$\alpha_7 no\_jobs_j + \alpha_8 loc_j + \alpha_9 edu\_bin_j + \alpha_{10} linc\_less\_remit_j$$
$$+\alpha_{11} region_j + \varepsilon_j \tag{13}$$

Definition, Measurement and Justification of Variables

This section defines and explains how the explained and explanatory variables in the model were selected and measured and their a priori expectations.

Number of hours of child labour per week (hours_chd)

The number of hours of child labour per week is measured by the number of hours the child spends in economic activity per week. In the study, the dependent variable is represented by the number of hours of child labour per week. A review of the literature finds in most cases, that an increase in remittances income leads to a reduction in child labour. Acharya and Leon-Gonzalez (2013) also find that remittances can be used to purchase labour-saving equipment, possibly decreasing the reliance on child labour. A study by Alcaraz et al. (2012) on Mexico also confirms that an increase in remittances can cause a decrease in child labour. With these findings, the current study used the number of hours a child in a household works per week as a proxy for child labour.

Location of household (loc)

The location of the household is expected to influence child labour. In many countries, child labour is mostly found as a rural phenomenon. For example, based on the results of the Ghana Living Standard Survey, Canagarajah and Coulombe (1997) find that more than 90% of child labour

exists in rural areas. Similarly, Edmonds and Turk (2004) find that children in rural Vietnam are more likely to work than those in urban areas.

Age of the household head (agey)

It is expected that the number of hours worked by a child increases with the age of the household head. The age of the household head to a larger extent affects the rate at which child labour use is seen. As household-head gets older it becomes increasingly hard to sustain the household and this makes them to involve children in farm labour (Idowu, Amos, & Olabisi, 2013).

Education of household head (Edu_bin)

The education of the household head is measured by indicating whether the head is educated or not. The education of the head of the household is expected to affect child labour. Studies in other countries have shown that the incidence of child labour is lower when the head of the household is educated. A Study by Priyambada, Suryahadi and Sumarto (2005) in Indonesia shows that the incidence of child labour quickly diminishes with higher levels of education of household heads.

Household size (hhsize)

The household size is measured by the number of members in the household. Household size is included in the model to control for the variations in the number of hours a child works per week within the household. As the size of the household increases, more income will be required to take care of the household and so the number of hours a child works is expected to increase (Bayot, 2007).

Natural log of remittances income (lnrem)

Remittances income is measured by summing up internal and international remittances income received by the households during the survey period. Remittances income is expected to have a negative effect on child labour. There are a number of studies that have found a negative relationship between remittances and child labour (Bargain & Boutin, 2014; Dimova et al., 2015; Coon, 2016).

To measure remittances income, internal and international incomes are summed up. In a study of this nature, it is normal for the relationship between remittances income and child labour to be nonlinear and or skewed. In order to take care of this, the natural log of remittances income is taken for easy interpretation. The use of a log transformation compresses the scale in which the variables are measured, reducing a tenfold difference between two values to a twofold difference. This reduces the possibility of heteroskedasticity in the model (Gujarati, 1995).

Gender interacting with remittances (Gender×rem)

In the model, *Gender × remit* is a dummy variable used to capture the difference between the decision to send a child to work by a female-headed household and a male-headed household. In other words, the inclusion of the dummy for the gender of the household head is to control for the possible difference in the number of hours a child works per week owing to the specific gender of the household head. A study conducted by Priyambada *et al.* (2005) indicates that households headed by females have significantly higher probability to send their children to work than households headed by males. Bhalotra and Tzannatos (2003) expect women-headed households to have

fewer economic resources because, on average, the education level of women is lower than that of men and this has the tendency to influence their decision to send children to work.

Household head engaged in economic activity (employed)

In the study, *employed* represents a dummy variable indicating whether the household head is engaged in any economic activity or not. Where the head of the household is engaged in any economic activity, the number of hours worked by children in that household is expected to be lower. Thus, households whose heads are better off tend to experience, a lower incidence of child labour. According to Wahba (2000), children whose parents work in the public sector have a greater probability of going to school than working.

Number of jobs (No_jobs)

The number of jobs is measured by the number of economic activities engaged by members of the household. The variable is expected to influence the number of hours a child works. As the number of jobs that the head of the household works increases, the number of hours a child works is expected to also increase all other factors held constant. This is so because it is expected that the child assists the household members in executing one or more of his/ her jobs if the jobs are many. Villamil (2002) states that child labour if increases households have their own enterprises which includes farms and other home-based manufacturing firms.

Household income excluding remittances (hninc_less_remit)

Household income includes income from employment, household Agriculture, rent, non-farm self-employment and others (e.g. pension receipts, interest on savings and investment etc.). Income by the household (excluding

remittances income) is expected to have a negative effect on child labour. An increase in household income is likely to reduce the tendency for parents to send their children out to work for more income. As incomes improve, the household may choose to have children work for less number of hours less. Also, higher household incomes may facilitate the purchase of substitutes (e.g. fertilizer spreader, combine harvester etc.) for child labour that may potentially lower the return to child labour within the household (Edmonds and Pavcnik, 2005; Dayioğlu, 2006)

Region (region)

Given the variation of lifestyle in the different regions of Ghana, we introduce regional dummies characterizing the variation in subsistence level and geographic biases. The metropolitan areas of Ghana may have higher cost of living but may also offer better economic opportunities than rural Ghana. To control for the variations in the incidence of child labour that may arise as a result of regional differences, a set of regional dummy variables is introduced in the model to capture the regional fixed effect. Ghana has ten administrative regions with unique characteristics in terms of geographical endowment, and composition of ethnic groups. Each of these factors can influence the decision by parents to send their children to work.

Table 1: *Definition of Child Labour Variables*

Variable	Definition	a priori Sign
ln *rem*	Internal and international remittances	Negative (Bargain & Boutin, 2014)
Gender_head	Binary variable to capture the gender of the household head	Indeterminate
Gender × remit	A variable interacting the gender of the household head with remittances	Indeterminate
Loc(rural)	Binary variable to capture the location of the household	Positive (Edmonds & Turk, 2004)
Hhsize	The household size	Negative (Bayot, 2007)
Employed	Dummy variable indicating whether the household head is employed or not	Negative (Wahba, 2000)
Edu_bin	A dummy variable indicating whether the household head is educated or not	Negative (Priyambada, 2005)
Agey	Age of the economic head of the household	Positive (idowu et al., 2013)
No_jobs	Number of jobs of the household	Negative (Villamil,2002)
Ininc_less_remit	Household income excluding remittances	Negative (Dayioğlu (2006)
Region	Categorical variable to capture regional effects	Indeterminate

Source: Compiled from literature and theories, (2016)

Potential Sources of Endogeneity

A problem commonly faced in estimating the causal impact of migrant remittances is endogeneity. Running a simple ordinary least squares (OLS)

regression of household outcomes with remittance receipts as explanatory variables could give a biased estimate of the impact. The error term and the explanatory variables are likely to be correlated due to several reasons such as reversed causality, omitted variables or selection bias. For instance, let us assume that the true coefficient β_1 is negative, i.e. remittance receipt reduces the extent of child labour.

Reversed causality could occur if for example, a migrant remits money to the household with the specific intention of retiring children from work by financing their education. In that case, child labour determines remittance receipt and not the other way around (Amuedo-Dorantes & Pozo, 2010). Estimates of β_1 may possibly be upward bias in this situation. In other words, the coefficient β_1 becomes less negative than expected or could even be positive. It is also possible to have an upward bias arising from omitted unobservables. This occurs when for instance, a specific shock forces the household to rely more on child labour and at the same time claim more remittances from its migrant.

Finally, and more problematic, a downward bias may also occur and lead us to wrongly conclude about the reducing effect of migrant remittances on child labour. Such a bias may arise when for instance, there is a common shock affecting both the migrant's location and the household's place of residence. In this case, a bad economic situation (like recession) could hinder the migrant's effort to send remittances home and increase the household's reliance on child labour.

Instrumental Variable Estimation-Two Stage Least Squares (2SLS)

Given the above sources of endogeneity, the use of OLS may lead to inconsistent estimates of the parameters of the model (Wooldridge 2006). To account for this endogeneity problem and identify the effect of remittances on child labour, the instrumental variable (IV) approach- two stage least squares (2SLS) procedure is employed. Another choice would have been to use panel estimations. However, this has proven not to be a valid option for three reasons. First is the fact that children age over the panel and this tends to disturb the analysis of child labour defined according to a fixed age window. Secondly, unobservables can be time-varying and, for that matter, are not taken into account by fixed effects estimators. Last but not the least reason is the fact that there is scarcity of panel data for African countries or the fact that panels are short.

To apply the 2SLS procedure, it is required that we identify a variable, z that satisfies two main conditions: (1) the variable must be uncorrelated with the error term μ (2) the variable must be correlated with the regressor being instrumented. The first condition is satisfied by excluding the instrument from being an explanatory variable in the structural model. This is to avoid having the variable z to be correlated with the error term. The second condition requires that there is some relationship between the variable being instrumented and the instrument. In order to prove that IV estimator is consistent, let us assume that a model is given as follows:

$$y = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \ldots \alpha_k x_k + \mu \tag{14}$$

$$E(\mu) = 0$$

$$\operatorname{cov}(x_j, \mu) = 0 \qquad j = 1, 2, 3 \ldots \ldots k - 1$$

Suppose x_k is correlated with μ, then $\text{cov}(x_j, \mu) \neq 0$. In that case, x_k is said to be endogenous. The correlation between x_k and μ will make OLS estimate of the parameters to be inconsistent. The IV procedure therefore provides a general solution to the endogeneity problem.

The use of an IV requires that we identify a variable z_i that satisfies two main conditions:

$\text{cov}(z_i, \mu) = 0$ and

$$x_k = \gamma_0 + \gamma_1 x_1 + \gamma_2 x_2 + \ldots \gamma_{k-1} x_{k-1} + \theta_1 z_1 + v \tag{15}$$

Where $\theta \neq 0$

The first condition requires that the identified variable is uncorrelated with the error term in the structural equation and the second condition states that z_1 must be partially correlated with x_k when the other explanatory variables are partialled out. The variable that satisfies the two conditions above is an instrument for the endogenous variable. After estimating equation (15) the following equation is considered.

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_{k-1} x_{k-1} + \delta_1 z_1 + w \tag{16a}$$

$$w = \mu + \alpha_k v \tag{16b}$$

$$\beta_j = \alpha + \alpha_k \gamma_i \tag{16c}$$

$$\delta_i = \alpha_k \theta_i \tag{16d}$$

Per the assumptions imposed on u and v OLS will give consistent estimates of the reduced form parameters β_j and δ_i. Since z_i is exogenous, Wooldridge (2006) indicates that $\alpha_j s$ are also identified. Suppose

$$y = x\alpha + \mu \qquad\qquad (17a)$$

$$z' = (1, x_1, x_2, \ldots x_k, z_i) \qquad\qquad (17b)$$

Multiply both sides of equation (16a) by z' and take expectations to get

$$\left[E(z'x)\right]\alpha = E(z'y) \qquad\qquad (18)$$

Where, $E(z'x)$ is a $k \times k$ matrix and $E(z'y)$ is a $k \times 1$ matrix. If $E[z'x] = k$, α

will have a unique solution and the α_s can be estimated as

$$\alpha = \left[E(z'x)\right]^{-1} E\left(z^{-1}y\right) \qquad\qquad (19)$$

Equation (19) can be estimated using a random sample of (x, y, z_1) in which

case, α is identified. Given a random sample $\{(x_i, y_i, z_{i1}) i \ldots\ldots N\}$, the IV

estimator

$$\alpha_{IV} = \left(N^{-1}\sum_{i=1}^{N} z_i' x_i\right)^{-1} \left(N^{-1}\sum_{i=1}^{N} z_i' y_i\right) = (z'x)^{-1} z'y$$

Where z and x are $N \times k$ data matrices and y is $N \times 1$ data vector on y_i. The

above procedure is applied when there is only one valid instrument for each

endogenous variable. However, when the instrumental variable for the

endogenous variable is more than one, the 2SLS is applied. Let a set of valid

instrument for x_k be represented by $z_1, z_2, \ldots\ldots\ldots z_m$ in equation (15) such that

$$\text{cov}(z_h, \mu) = 0, \quad h = 1, 2, \ldots\ldots m.$$

Thus, the reduced form equation of x_k can be written as

$$x_k = \gamma_0 + \gamma_1 x_1 + \gamma_2 x_2 + \ldots\gamma_{k-1} x_{k-1} + \theta_1 z_1 + \ldots\theta_m z_m + v \qquad\qquad (20)$$

Since $\text{cov}(z_h, \mu) = 0$, any linear combination of z will also be exogenous.

Assume there are no linear dependencies among the variables under consideration, we can use sample to estimate x_k as follows:

$$\hat{x}_{i_k} = \hat{\gamma}_0 + \hat{\gamma}_1 x_{i1} + \ldots \hat{\gamma}_{k-1} x_{k-1} + \hat{\theta}_1 z_1 + \ldots \hat{\theta}_m z_{im} + v.$$

Given that the log of remittances is expected to be endogenous, the first stage equation is estimated as follows:

$$\ln rem_j = \gamma_0 + \gamma_1 gender \times remit_j + \gamma_2 gender\_head_j + \gamma_3 agey_j + \\ \gamma_4 hhsize_j + \gamma_5 employed_j + \gamma_6 no\_jobs_j + \gamma_7 loc_j + \gamma_8 edu\_bin_j + \\ \gamma_9 \ln inc\_less\_remit_j + + \gamma_{10} region_j + \upsilon_j \qquad (21)$$

In the literature, the instruments deemed the least controversial are the means of transferring funds (as proxy for the availability of bank offices) used by (Calero *et al.*, 2009), historical migration rates and the presence of migration networks used by Hanson and Woodruff (2003), McKenzie and Rapoport (2011), and Acosta (2011), exchange rate appreciation used by Yang (2008), and finally, variation in labour market conditions in destination areas used by Antman (2011), Amuedo-Dorantes and Pozo (2010), and Adams and Cuecuecha (2013).

Not all these instruments can be replicated due to data limitations. In view of this, the study used means of transferring remittances (as proxy for the availability of remittance-receiving offices). These include bank accounts. Western union, money gram, Vigo, fast money transfer, post office, friends/ relations, brought home by migrant and other means. The means of transferring funds is chosen because it correlates with remittances flow but not child labour. After estimating the first stage equation, we plug the predicted values of equation (21) into the structural equation. Thus, we have

$$hours\_chd_{ij} = \alpha_0 + \alpha_1 gender \times remit_j + \alpha_2 \ln rem_j + \alpha_3 gender\_head_j$$
$$+\alpha_4 agey_j + \alpha_5 hhsize_j + \alpha_6 employed_j + \alpha_7 no\_jobs_j + \alpha_8 loc_j +$$
$$\alpha_9 edu\_bin_j + \alpha_{10} linc\_less\_remit_j + \alpha_{11} region_j + \varepsilon_j \qquad (22)$$

Regression Diagnostics and Post-Estimation Tests

In order to ensure that estimates from the regression are robust and consistent, the following tests were conducted.

1. Hausman Test of Endogeneity

Before the estimation was done, the endogeneity test was conducted to determine if the remittance variable was endogenous. Specifically, the study used the regression based Hausman test of endogeneity proposed by Durbin (1954), Wu, (1973) and Wu and Hausman (1978). To explain how the test is carried out, assume reduced form equation of the suspected endogenous variable x_k is given as

$$x_k = z\pi + v_1 \qquad (23)$$

Where z is uncorrelated with v_i and a structural model given as

$$y = z\rho + \lambda_k x_k + \mu_1 \qquad (24)$$

Where z and μ_1 are uncorrelated. If x_k is exogenous it implies that $E(x_i, \mu_1) = 0$ and $E(\mu_1, v_1) = 0$ given that z is uncorrelated with μ_1 and v_1. However, if x_k is endogenous, $E(x_i, \mu_1) \neq 0$ and $E(\mu_1, v_1) \neq 0$ even though z may be uncorrelated with μ_1 and v_1. Based on this condition, the null hypothesis of the exogeneity tests is stated as

$H_o : E(\mu_1, v_1)$. The linear projection of the error term μ_1 is then written on the reduced form residual v_1 as follows:

$$\mu_1 = \varphi_1 v_1 + \omega$$

This implies that $E(\mu_1, \nu_1) = \varphi_1 \sigma_\nu^2$. Thus, the null hypothesis can be rewritten as

$H_0 : \varphi_1 = 0$. Thus, x_k is said to exogenous if and only if $\varphi_1 = 0$. To empirically test this hypothesis, let us substitute $\mu_1 = \varphi_1 \nu_1 + \omega$ into equation (24) to obtain

$$y = z\rho + \lambda_k x_k + \varphi_1 \nu_1 + \omega \qquad (25a)$$

It must be noted that ν_1 is not directly observed but it can be estimated from the reduced form equation in equation (23) as

$$\hat{\nu}_1 = x_k - z \hat{\pi}$$

And this will enable us to run equation (25a) using OLS as

$$y = z\rho + \lambda_k x_k + \varphi_1 \hat{\nu}_1 + \omega \qquad (25b)$$

After estimating equation (25b), the exogeneity test can be carried out under $H_0 : \varphi_1 = 0$. The failure to reject the null hypothesis means that x_h is endogenous. We then predict the residual from equation (21) and run the structural equation with the predicted residual as one of the explanatory variables. Thus, we have

$$
\begin{aligned}
hours\_chd_i &= \alpha_0 + \alpha_1 gender \times remit_j + \alpha_2 \ln rem_j + \alpha_3 gender\_head_j + \\
&\alpha_4 agey_j + \alpha_5 hhsize_j + \alpha_6 employed_j + \alpha_7 no\_jobs_j + \alpha_8 loc_j + \\
&\alpha_9 edu\_bin_j + \alpha_{10} linc\_less\_remit_j + \alpha_{11} region_j + \alpha_{12} \hat{v}_j + \varepsilon_j \qquad (26)
\end{aligned}
$$

If it is established that α_{12} is statistically different from zero, we conclude that $\ln rem$ is endogenous. On the other hand, if we fail to reject the null hypothesis α_{12} is equal to zero, implies that $\ln rem$ can be treated as an exogenous variable in the child labour ($hours\_chd$) model.

2. Weak Identification Test

For an instrument to be valid, it must be correlated with the endogenous regressor. The use of a weak instrument leads to bias of the IV estimates of the parameters of the model. The null hypothesis is that the instrument is weak whilst the alternative hypothesis is that it is not weak. The test statistic as proposed by Stock and Yogo (2002) is given as:

$$F = \left(\frac{N-L}{L_2} \frac{r^2 K_1}{1-r^2 K_1} \right)$$

$$L_2 = (L - L_1)$$

Where K_1, is the number of endogenous regressors, L is the number of exogenous regressors. L_1 is the number of excluded instruments. N is the number of observations and $r^2 K_1$ is the canonical correlation (Baum, Schaffer & Stillman 2007). If the test statistic is less than the critical values provided by Stock and Yogo (2002), we fail to reject the null hypothesis and this means that the instrument is weakly correlated with the endogenous regressors.

3. Omitted Variables Test

To check for the correct specification of the model, the study conducted the specification link test. The idea behind the use of a link test is to add an independent variable to the equation that is especially likely to be significant if there is a link error.

Effect of Remittances on Child Welfare Clinic Attendance - Theoretical Framework

The theoretical framework for this study draws from the insights of the Grossman (1972) model of health production function. According to this model, individual utility can be characterized as a function of health in all

periods that individuals maximize subject to a budget constraint. The study is therefore inspired by this theoretical construction and seeks to adopt it. In the model, households choose child health (H), leisure (L), and consumption of goods and services (C) and they are assumed to maximize a unitary household utility function which can be represented as follows:

$$U = f(H, L, C, X) \tag{27}$$

where X is a vector of household characteristics such as, among others, the household size, the age of the household head and average level of mother's education. The health status of a child H is a normal good that depends on nutritional and medical inputs, biologic endowments and some household characteristics.

The utility function is subject to a budget constraint stated as follows:

$$P'G = \sum_n l_n \tag{28}$$

Where P represents the price vector, G is the commodity consumption of all household members and l_n denotes the household resources accruing to individual $n(=1,.....N)$

Thus, the health status H_i, of child i, at any point in time can be modelled as the following health production function:

$$H_i = f(M_i, B_i, X_i, \varepsilon_i) \tag{29}$$

Where M_i represents the medical and nutritional inputs into the health of child i, such as pre- and postnatal care, maternal and postnatal nutrition, child welfare clinic attendance and the disease environment; B_i represents biological endowments such as genetic factors and some household characteristics; and ε_i represents random health shocks. According to Hildebrandt et al. (2005),

the most obvious channel through which remittances may positively affect child health status is increasing household income and wealth and then allowing a higher investment in children. Moreover, if remittances relax liquidity constraints, it may allow parents to make additional investments they could not otherwise have made.

McKenzie and Sasin (2007) have stated two reasons why remittance income may be spent in differently than normal income. First, according to the permanent income hypothesis, if remittance income is considered temporary and health is seen as an investment by parent, remittances will be mainly invested, for example, in child health through increased child welfare clinic attendance, instead of being spent on normal consumption. Second, it is possible that money is remitted with a specific purpose, favouring investment over consumption.

According to Adams and Page (2005) at the margin, households receiving remittances in Guatemala spend more on education and health. Therefore, in principle, economic theory predicts a positive effect of remittances on child health. Finally, remittances could function as an insurance mechanism to smooth away income shocks. For instance, a study by Frankel (2011) using cross-country data seems to support this interpretation: remittances are pro-cyclical with respect to income in the migrant's host country or town and they are countercyclical with respect to income in the migrant's hometown or country of origin.

Empirical Models and Estimation Techniques II

This section explains the estimation technique employed in investigating the effect of remittances on child welfare clinic attendance in

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Ghana. The econometric model for this analysis assumes that the household decision to spend on child health is purely based on the objective of utility maximization as discussed in the theoretical model. The decision to examine the effect of remittances on child welfare clinic attendance is based on the fact that most infant deaths occur during the child welfare clinic attendance period (World Health Organisation, 2014). Child welfare clinic attendance is important for identifying, managing and referring babies and reducing deaths. In Ghana, the child welfare clinic is a free service that allows parents to have children below 2 years of age get weighed and immunised on monthly basis with the Ghana Health Service approved vaccines.

However, it is important to note that some communities do not have public health care facilities and so nursing mothers will either have to travel to other places in order to access these services or visit private health care facilities for such services. Nursing mothers who have to travel with their babies to attend child welfare clinics in other places outside their communities may have to incur transport costs. In the same vein, parents who send their children to private health facilities (because of the absence of public health facilities in their communities) for such services pay for them. In view of all these, it is expected that remittances income received by the household will lead to an increase in the number of times children attend child welfare clinics and for that matter an improvement in child health.

Poisson Regression Model- Child Welfare Clinic Attendance

In this study, a count variable (child welfare clinic attendance) is used as the dependent variable. The probability distribution that is specifically suited for count data is the Poisson probability distribution and the appropriate

model is the Poisson regression model. Poisson regression model is different from the zero-inflated Poisson model in the sense that the latter assumes that the data come from two distinct populations: one population that never experiences the event, and another one for which events are generated from a standard model. Poisson regression was used in the study to analyse the outcome variable (i.e. child welfare clinic attendance), given that this technique is more appropriate for count outcomes (Dean & Lawless, 1989; Mullahy, 1986). Counts are usually positive integers that assume a Poisson rather than a normal distribution. The probability distribution function of the Poisson distribution is given by

$$f(Y_i) = \frac{\mu^Y \ell^{-\mu}}{Y!} \qquad\qquad Y = 0,1,2.... \qquad\qquad (30)$$

Where $f(Y)$ represents the probability that the variable Y takes non-negative integer values, and $Y! = Y \times (Y-1) \times (Y-2) \times 2 \times 1$. It must be noted that here the mean and the variance of the Poisson distribution are the same. Thus, $E(Y) = \mu$ and $var(Y) = \mu$

The Poisson regression model is derived from the Poisson distribution by parameterizing the relation between the mean parameter μ and covariates (regressors) x. The standard assumption is to use the exponential mean parameterization,

$$\mu_i = \exp(X_i' \beta) = Exp(\beta_1 + \beta_2 x_{2i}.......\beta_k x_{ki}) \qquad\qquad i = 1,2,.........n$$

Where by assumption, there are k linearly independent covariates, usually including a constant. The regressors are chosen in a manner similar to a linear regression model. Thus, the X's are some of the variables that might affect the mean value. Since the count variable is the number of times the mother has

taken the child to child welfare clinics in a year, this number will depend on variables such as remittance amount to the household, the level of education of the household head, the household size, the poor status of the household, location of the household, etc. To estimate this, the model is written as:

$$Y_i = \frac{\mu^Y \ell^{-\mu}}{Y!} + \mu_i$$

Since the dependent variable is the number of times the child attends child welfare clinics, this is represented by, pn and the model is rewritten as follows:

$$Pn_i = \frac{\mu^{Pn_i} \ell^{(-\mu)}}{Pn!}$$

Where $\mu > 0$ and $pn = 1, 2, 3 \ldots$ denotes the intensity of the Poisson process.

Underlying Assumptions of the Poisson Regression Model

Let $Pni (i = 1 \ldots n)$ be the random dependent variable event count with nonzero probability. Pni is observed only at the end of each period i. To derive a specific probability distribution, it is important to make specific assumptions about the unobserved process within each observation period, generating the observed count at the end of the period. For example, suppose the following assumptions are made about the process during observation period i:

1. The probability of an event occurring at any instance is constant within period i and independent of all previous events during that observation period.

2. More than one event cannot occur at the same instant.

3. Zero events have occurred at the start of the period (King, 1989).

4. The expected value and the variance of the error terms are equal and given as follows:

$$\rho(Pn_i) = \frac{\mu^{Pn_i} \ell^{(-\mu_i)}}{Pn_i!}$$

(31)

Suppose we have a sample data on child welfare clinic attendance by children $(Pn_1,....Pn_n)$, the corresponding log-likelihood function is the logarithm of the product of the marginal probabilities.

$$\ln L(\theta / C_i.........C_n) = \sum_{i=1}^{N} \ln \rho(C_i)$$

$$x \sum_{i=1}^{N} \{C_i \ln[n_i \pi(v,\theta] - n_i \pi(v,\theta)\}$$

(32)

The maximum likelihood estimator is that value which maximizes this log likelihood function.

Interpretation of the Estimated Poisson Regression Model (PRM)

Incidence Rate Ratios

This approach converts raw coefficients into incidence rate ratios, by exponentiating them. Suppose we are comparing the predicted rate of occurrence (or incidence) in two observations, which differ only in that variable X_j. This variable takes on the value of 1 in the first observation and 0 in the other. Then we can comfortably use the systematic portion of the basic Poisson model to calculate the ratio of these two incidence rates. This is given as:

$$\frac{E\left(Y_i / X_j = 1\right) = \ell^{\left(\hat{\beta}_0 + X\hat{\beta} + (1)\hat{\beta}_j\right)}}{E\left(Y_i / X_j = 1\right) = \ell^{\left(\hat{\beta}_0 + X\hat{\beta} + (1)\hat{\beta}_j\right)}} = \ell^{\left(\hat{\beta}_j\right)}$$

(33)

By definition, a rate is the number of events per time (or space), and the response variable used in this study qualifies to be described as such. So in order to calculate the relative change in the incidence rate brought by a one-unit change in an independent variable, its coefficient will have to be exponentiated. Generally, a one unit change in a variable leads to a change in the incidence rate and this is given by ℓ^{β_j}. Thus, the Poisson regression coefficients could be interpreted as the log of the rate ratio.

Empirical Poisson Model for Child Welfare Clinic Attendance

According to Gujarati (2004), a Poisson regression treats child welfare clinic attendance as a Poisson random variable with an intensity hypothesized to depend on stated explanatory variables. Thus, the empirical model for the study is stated as follows:

$$\mu_i = E\left(Pn_i / X_i\right) = b_0 + b_1 \ln \text{Re} \, mit + b_2 \ln inc\_less\_remit + b_3 no\_of\_migrants + b_4 edu\_bin + b_5 Poor + b_6 Region + e_i$$

(34)

Where $\ln \text{Re} \, mit$ is the log of remittances income, $\ln inc\_less\_remit$ is household income without remittances, edu_bin represents whether the household head is educated or not, $Poor$ is the poverty status of the household, $no\_of\_migrants$ is the number of migrants in a household, $Region$ represents regional dummies and e is the error term.

Regression Diagnostics and Post-Estimation Tests

In order to ensure that estimates from the Poisson regression are robust, unbiased and consistent, the data was first observed to deal with influential observations, outliers, missing values and implausible values. The following diagnostics and post estimation tests were also conducted.

Test of Heteroskedasticity of Residuals

One of the important assumptions of the classical linear regressions model is that the variance of each disturbance term, conditional on chosen values of the explanatory variables is some constant number equal to σ^2 (Gujarati & Porter, 2009). This is referred to as the assumption of homoscedasticity and it is expressed symbolically as:

$$E\left(\mu_i^2\right) = \sigma^2 \qquad i = 1, 2, \ldots \ldots n$$

By default, STATA assumes homoskedastic standard errors and so the model was adjusted to account for heteroskedasticity by using heteroskedasticity-robust standard errors to deal with the problem of heteroskedasticity (Ronchetti, 1985). By adding "robust" to the equation in STATA, the problem of hetereoskedasticity is addressed.

Model Specification Error Test

In practice, there is more concern with whether a model has all the relevant predictors and if the linear combination of the predictors is sufficient. There are a number of methods to detect specification errors. The Link test performs a model specification test for single-equation models. The STATA command, link test can be used to detect a specification error, and it is issued after the Poisson regression. The idea behind link test is that if the model is

properly specified, one should not be able to find any additional predictors that are statistically significant except by chance.

After the Poisson regression command, link test uses the linear predicted value (_hat) and linear predicted value squared (_hatsq) as the predictors to rebuild the model. The variable _hat should be a statistically significant predictor, since it is the predicted value from the model. But in the case of testing for omitted variables (s), emphasis is placed on the _hatsq and it is not supposed to be significant. This is what is used in this study to do the model specification test. Thus, if _hatsq is significant, then the linktest is significant. This usually means that either we have omitted relevant variable(s) or our link function is not correctly specified (Chen, Hua, Reifman, & Cheng, 2003). In that case, efforts must be made to correctly specify the relevant variables.

Goodness-of-Fit of the Model

Several measures of goodness-of-fit for the Poisson regression model have been proposed in the literature. The model fit tells us whether the specified model fits the distribution and the nature of the data available. One of the ways by which to check the fitness of the model is by the use of log likelihood chi-square. The log-likelihood chi-square is used in determine whether the model as a whole is statistically significant. It is obtained by multiplying the 2 by the difference between the log likelihood of the current model and the log likelihood of the intercept- only model. The pseudo R-square is another measure of goodness of fit. This measure is slightly different from the log likelihood chi-square, but a captures almost the same thing in that it is the proportion of change in terms of likelihood. The Akaike information

criterion (AIC) is another commonly used measure (Akaike, 1973). It is defined as $AIC = -\log L + (k + 1)$ where $k + 1$ is the number of estimated parameters and L is the likelihood function. The fit of the model is better when the value of the AIC statistic is smaller.

Another commonly used test of model fit is the Pearson or Hosmer and Lemeshow's goodness-of-fit test. The Hosmer-Lemeshow goodness of fit test is based on dividing the sample up according to their predicted probabilities, or risks. Specifically, based on the estimated parameter values $\hat{\beta}_0, \hat{\beta}_1, \ldots, \hat{\beta}_p$, for each observation in the sample the probability that $Y=1$ is calculated, based on each observation's covariate values:

$$\hat{\pi} = \frac{\exp\left(\hat{\beta}_0 + \hat{\beta}_1 X_1 + \ldots + \hat{\beta}_p X_p\right)}{1 + \exp\left(\hat{\beta}_0 + \hat{\beta}_1 X_1 + \ldots + \hat{\beta}_p X_p\right)} \qquad (35)$$

The observations in the sample are then split into a number of groups. The idea behind this test is that the predicted frequency and observed frequency should match closely. The closer the two frequencies match, the better the fit. The Hosmer- Lemeshow goodness-of-fit statistic is computed as the Pearson chi-square from the contingency table of observed frequencies and expected frequencies. Similar to a test of association of a two-way table, a good fit, as measured by Hosmer and Lemeshow's test, will yield a large p-value to indicate that the model fits the data.

Another measure of goodness of fit that is worthy of mention is the McFadden's (1974) likelihood ratio given as

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$LRI = 1 - \dfrac{\ln L}{\ln L_0}$. Where $\ln L$ represents the log likelihood is function and $\ln L_0$

is a constant term. This measure has an intuitive appeal in that it is bounded by zero and one. LRI increases as the fit of the model improves.

Definition, Measurement and Justification of Variables

This section defines and explains how the explained and explanatory variables in the model were selected and measured and a priori expectations

Child welfare clinic attendance

In the study, the dependent variable is represented by child welfare clinic attendance. This variable is measured by the number of times the child is immunised and vaccinated in a year. Because of the fact that financial constraint may inhibit the ability of some mothers to attend child welfare clinics, an increase in remittances to a household is expected to increase child welfare clinic attendance all other factors held constant.

Natural log of remittances (lnRemit)

This variable is measured by the sum of internal and international remittances flow to the household during the survey period. Remittances income received by the household is expected to increase child welfare clinic attendance by the mother and child. To measure remittances income in the study, internal and international incomes are summed up. There are a number of studies that have found a positive effect of remittances on child health. A study by Anton (2010) confirms that children living in households receiving remittance income have better anthropometric indicators than those in non-recipient households.

In a study of this nature, it is normal for the relationship between remittances income and child health to be nonlinear and or skewed. In order to

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take care of this, the log of remittances income is taken for easy interpretation. The use of a log transformation compresses the scale in which the variables are measured, reducing a tenfold difference between two values to a twofold difference. This reduces the possibility of heteroskedasticity in the model (Gujarati, 1995)

Log of income without remittances (lninc_less_remit)

This variable represents the income of the household before remittance income is received. This includes income from employment, household Agriculture, Non-farm self-employment, rent and other sources like pension receipts, interest on savings and investment etc. Household income is expected to positively affect child welfare clinic attendance all other things being equal. Studies that attempt to investigate the causal impact of income on health find evidence of a positive relationship at both the macro- and microeconomic levels.

Since health is considered as a normal good, higher income allows households to purchase more medical and nutritional inputs. Currie, Shields, and Price (2007) find evidence that in England, household income and child health are positively related. More importantly, the authors find consistent and robust evidence of a significant family income gradient in child health.

Poor status (Poor)

The financial status of a household is expected to affect child welfare clinic attendance other things being equal. The poor status of a household is likely to negatively influence child welfare clinic attendance which may adversely affect the health of the child. Case, Lubotsky and Paxson (2002)

find evidence that children from poorer families have worse health than children in richer families in the United States.

Number of migrants (no_of_migrants)

The number of migrants in a household affects child welfare clinic attendance by the mother and child. Migration may impact on health outcomes through non-monetary channels such as the transfer of health knowledge information by migrants to family members (Hildebrandt et al., 2005).

Education of the household head (edu_bin)

The education of the household head is expected to influence on the health of the child in the household positively. Using Cameroon household Consumption survey data collected by the government statistics office in 2001 and a range of econometric methods, Baye and Fambon (2009) find evidence of a positive effect of parental education on child health.

Region (Region)

To control for the variations in child welfare clinic attendance that may arise as a result of regional differences, a set of regional dummy variables is introduced in the model to capture the regional fixed effect. Ghana has ten administrative regions with unique characteristics in terms of endowment, and ethnic groups. Each of these factors can influence child welfare clinic attendance by mothers in any given region.

Table 2: *Definition of Variables for Child Welfare Clinic Attendance*

Variable	Definition of Variable	A priori sign
Lnremit	Log of remittance income	Positive (Anton, 2010)
Lninc_less_remit	Log of household income without remittances	Positive (Curie et al., 2007)
No_ of_migrants	Number of migrants	Positive (Hildebrandt et al.,2005)
Poor	Dichotomous variable for poor and non- poor household	Negative (Case et al., 2002)
Ed_bin	A binary variable to determine whether the head of the household is educated or not	Positive (Baye & Fambon, 2009)
Region	Categorical variable that captures regional effect	Indeterminate

Source: Compiled from literature and theories (2016)

Effect of Remittances on Child Education- Theoretical Framework

The theoretical framework for this study draws from the insights of Milligan (2009). Suppose that a household maximizes utility, U which is a function of a vector of quantities consumed $\{c_1, c_2........c_j...c_J\} = \vec{c}$ and a vector of child education variables $\{e_1, e_2......e_k....e_K\} = \vec{e}$, such that $\forall_j, \dfrac{\partial u(\vec{c}, \vec{e})}{\partial c_j} > 0$ and $\forall_k, \dfrac{\partial u(\vec{c}, \vec{e})}{\partial e_k} > 0$. Households maximize utility in two ways: by consuming

and by spending income on child education. Consumption and child education are assumed to be positive functions of household income (including remittances). Suppose that the kth measure of child education e_k is a linear combination of remittances and other household and individual level variables, such that

$$e_k = \alpha_{0,k} + \alpha_{1,k} \sum_{m=1}^{M} MPC_{m,k} Y_m + \beta_k X_k \qquad (36)$$

Where $MPC_{m,k}$ are rates of improvement to child education metric e_k from household income, Y_m. Vectors of coefficients and other independent variables are represented by β_k and X_k respectively. Since the focus of this study is on the effect of remittances on child education, equation (36) is re-written as follows:

$$e_k = \alpha_{0,k} + \alpha_{1,k} \operatorname{Re} m + \beta_k X_k + \varepsilon_k \qquad (37)$$

Where Rem is remittances income and ε_k is the error term.

Empirical Model and Estimation Techniques III

This section of the study explains the empirical methodology employed to estimate the effect of remittances on child education in Ghana.

Specification of Empirical Model

The empirical model is designed to test the preceding theoretical framework in which it has been indicated that remittances are important in sending a child to school by the household, hence child education depends on remittances. The model assumes that the household decision to spend on child education is purely based on the objective of utility maximization as discussed in the theoretical model.

Following Amuendo-Dorantes and Pozo (2010), the child education function is stated as follows:

$$hours\_sch_{ij} = \alpha_0 + \alpha_1 \operatorname{Re} m_j + \alpha_2 X_j + \varepsilon_j \qquad (38)$$

Where *hours_sch* represents the number of hours spent per week by child i in household j, and $\operatorname{Re} m_j$ is the log of remittances amount. X_j is a vector of household characteristics (size, location, region, absence of the spouse and number of migrants). These characteristics have been observed in other studies to have a strong effect on schooling outcomes (see De Serf, 2002; Curran, Chung, Cadge, & Varangrat, 2003; Sherpa, 2011). The error term ε_k captures the effects of unobserved factors common to a given household. Equation (38) is re-written as:

$$hrs\_sch_{ij} = \alpha_0 + \alpha_1 \ln rem_j + \alpha_2 \ln inc\_less\_rem_j + \alpha_3 loc_i +$$
$$\alpha_4 hhsize_j + \alpha_5 no\_of\_migrants_j + \alpha_6 ab\_spouse_j + \alpha_7 hours\_chd_j \quad (39)$$
$$\alpha_8 age\_chd_j + \alpha_9 region_j + \varepsilon_j$$

Definition, Measurement and Justification of Variables

This section gives the definitions and explains how the dependent and explanatory variables in the model were selected and measured and their a priori expectations.

Number of hours spent in school per week (hrs_sch)

In the study, the dependent variable is represented by the number of hours children in a household spend in school. The number of hours spent in school is measured by the total number of hours the child spends in school per week. A review of the literature finds in some cases, that an increase in remittance income leads to an increase in the number of hours a child spends in school all other factors remaining equal (Amuedo-Dorantes & Pozo, 2010).

Natural log of remittances (lnrem)

Remittances income is measured by the total amount of remittances received by households from internal and international migrants. Amuedo-Dorantes and Pozo (2010) find that in Haiti, an increase in the probability of remittance receipt of 10 percentage points raises the likelihood of school attendance by 2 percentage points. Thus, remittances are expected to positively affect the number of hours children in a household spend in school.

Location (Loc)

This variable represents the location of the household where rural is 1 and urban is 0. There has been consistent evidence that the location of the household has an important impact on child education. Edwards and Ureta (2003) indicate that children who live in urban areas have a higher probability of achieving any grade level as compared to children in rural areas. More importantly, the authors acknowledge that, in the case of El Salvador, remittances have a much greater impact on the risk of school dropout, especially in rural areas.

Log of household income less remittances (linc_less_rem)

Just like in the previous cases, this variable is measured by income from employment, household Agriculture, non-farm self-employment, rent, and other sources such as pension receipts, interest on savings and investment etc. Household income is expected to have a positive effect on child schooling. Holmes (2003) and Sánchez and Sbrana (2009) suggest that wealth and high per capita income increase the likelihood of attending school for girls in the case of Pakistan and Yemen, respectively. In a similar study, Kalaj (2010) finds that in Albania, incomes net from remittances have a positive effect in

lowering the hazard of dropping school by around 14.1% for every unit increase in income level. This result provides evidence on the fact that income matters for child education.

Absence of a spouse (ab_spouse)

The absence of a spouse in a household can influence the number of hours a child spends in school. When the head is divorced, separated or widowed, it leads to a rather large reduction in the probability of boys to be enrolled in rural areas, presumably because most of such households are female headed and need the boy to work (González-König & Wodon, 2007). Giorguli, Saucedo, Lezama, and Morelos (2006) find evidence that living with both parents delays labour force entry for Mexican children. This suggests that these children have a greater opportunity to focus on their education.

Number of migrants in a household (migrants)

This variable is measured by the number people who have left the household to work elsewhere. The migration of a household member is likely to adversely affect child education. McKenzie and Rapoport (2005) find that the absence of migrant parents results in less supervision of children and, perhaps, in the need for children to undertake household work in place of migrant adults. This is likely to affect the number of hours they spend in school.

Number of hours of child labour per week (hours_chd)

The number of hours of child labour per week is measured by the total number of hours a child is engaged in economic activity per week. The number of hours of child labour is expected to negatively influence child schooling. As the number of hours a spends in working increases, the time

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he/she spends in school decreases. Gunnarsson, Orazem and Sanchez (2006) find that there is a negative effect of child labour on child schooling in Latin America.

Household size (hhsize)

This variable measures the total number of members of a household. A growing literature on the relationship between family size and children's education in the developing world shows that the results are mixed. The effect of family size on children's educational outcomes varies greatly by time and place and ranges from negative to positive, depending on the specific context (Maralani, 2008). In this particular study however, the effect of household size is expected to be negative. Shen (2017) finds that there is an inverse association between family size and child education in China.

Age of the child (age_chd)

The age of the child is measured by the age of the child in the household. The age of children is a determinant of their school attendance. Using data from the 1999 Multiple Indicator Cluster Survey (MICS) of Nigeria, Olaniyan (2011) concludes that the older a child becomes, the higher the probability of attending school.

Region (Region)

To control for the variations in child education that may arise as a result of regional differences, a set of regional dummy variables is introduced in the model to capture the regional fixed effect. A region's degree of modernisation may influence the decision of parents to invest in their children's education.

Table 3: *Definition of Child Education Variables*

Variable	Definition	a priori Sign
Lnrem	Log of Internal and international remittances	Positive (Amuedo-Dorantes & Pozo, 2010)
Loc	Dichonomous variable to capture rural and urban households	Indeterminate
*no _ of _*migrants	Number of migrants belonging to the household	Negative (Mckenzie & Rapoport, 2005)
Age_chd	Age of a child in the household	Positive (Olaniyan, 2011)
Hours_chd	The number of hours of child labour	Negative (Gurnnasson et al. 2006)
Household size	The number of members of the household	Negative (Shen, 2017)
ab_spouse	Absence of a spouse in a household	Negative (Saucedo, 2006)
Region	Categorical variable to capture regional effects	Indeterminate

Source: Compiled from literature and theories (2016)

Empirical research seeking to examine the effect of migrant remittances on child education is often complicated by endogeneity, selectivity and omitted variable problems.

Potential Sources of Endogeneity

Decisions on migrant remittances and education choices are usually made simultaneously and many variables that explain migrant remittances also determine education preferences (Shapiro, 2009). This may lead to inconsistent estimates. Remittances can be the cause and the consequence of child education. Remittances to the household can lead to an improvement in child education. On the other hand, child education can influence an increase in the transfer of remittances to the household. The impact direction is

therefore unclear and so it has become a common practice in remittances research to test for endogeneity especially, when using household survey data.

Instrumental Variable Estimation Model- Two Stage Least Squares (2SLS)

Estimating equation (39) using the OLS method is likely to yield biased coefficient estimates due to the presence of endogeneity between child education and migrant remittances. If a test for endogeneity reveals that there is the presence of endogeneity between remittances and child education, the instrumental variables approach- 2SLS procedure can be used to control for such endogeneity bias arising from omitted variables and reverse causation. In using the 2SLS procedure, it is required that we identify instruments that satisfy two general restrictions as proposed by Wooldridge (2009).

First, the instrument must be correlated with the variable which is instrumented. Second, it must be uncorrelated with the model error term. A good instrumental variable can eliminate the biases that arise from this endogeneity.

Given that the log of remittances is expected to be endogenous, the first stage equation is estimated as follows:

$$\ln rem_j = \gamma_0 + \gamma_1 migrants_j + \gamma_2 \ln inc\_less\_remit_j + \gamma_3 loc_j + \gamma_4 hhsize_j + \gamma_5 ab\_spouse_j + \gamma_6 hours\_chd_j + \gamma_7 age\_chd_j + \gamma_8 region_j + \upsilon_j \qquad (40)$$

Means of remittances transfer are used as an instrument for remittances. This instrument is chosen because it correlates with remittances flow but not child education. After estimating the first stage equation, we plug the predicted values of equation (40) into the structural equation. Thus, we have

$$hrs\_sch_{ij} = \alpha_0 + \alpha_1 \ln rem_j + \alpha_2 \ln inc\_less\_rem_j + \alpha_3 loc_j + \alpha_4 hhsize_j +$$
$$\alpha_5 no\_of\_migrants_j + \alpha_6 ab\_spouse_j + \alpha_7 hours\_chd_j + \alpha_8 age\_chd_j +$$
$$\alpha_9 region_j + \varepsilon_j \tag{41}$$

Justification of Instrument Used

In this model, several instruments have been considered for the remittance variable. These include the fraction of households receiving remittances used by Adams and Cuecuecha (2013) and the role of social network used by Hines and Simpson (2015). However, the one that turns out to be suitable is the transactions costs of remittances transfer (as proxied by the availability of remittance-receiving offices) used by Calero et al. (2009). Remittance decision depends largely on the availability of remittance receiving offices.

Regression Diagnostics and Post Estimation Tests

In order to ensure that estimates from the regression are robust and consistent, the following tests were conducted.

1. Hausman Test of Endogeneity

Before the IV estimation was conducted, a test of endogeneity was conducted for child education and remittances. The study used the regression based Hausman test of endogeneity proposed by Durbin (1954), Wu (1973) and Hausman (1978). To explain how the test is carried out, assume reduced form equation of the suspected endogenous variable x_k is given as

$$x_k = z\pi + v_1 \tag{42}$$

Where z is uncorrelated with v_i and a structural model given as

$$y = z\rho + \lambda_k x_k + \mu_1 \tag{43}$$

Where z and μ_1 are uncorrelated. If x_k is exogenous it implies that $E(x_i, \mu_1) = 0$ and $E(\mu_1, v_1) = 0$ given that z is uncorrelated with μ_1 and v_1. However, if x_k is endogenous, $E(x_i, \mu_1) \neq 0$ and $E(\mu_1, v_1) \neq 0$ even though z may be uncorrelated with μ_1 and v_1. Based on this condition, the null hypothesis of the exogeneity tests is stated as

$H_o : E(\mu_1, v_1)$. The linear projection of the error term μ_1 is then written on the reduced form residual v_1 as follows:

$$\mu_1 = \varphi_1 v_1 + \omega$$

This implies that $E(\mu_1, v_1) = \varphi_1 \sigma_v^2$. Thus, the null hypothesis can be rewritten as

$H_0 : \varphi_1 = 0$. Thus, x_k is said to exogenous if and only if $\varphi_1 = 0$. To empirically test this hypothesis, let us substitute $\mu_1 = \varphi_1 v_1 + \omega$ into equation (43) to obtain

$$y = z\rho + \lambda_k x_k + \varphi_1 v_1 + \omega$$

(44a)

It must be noted that v_1 is not directly observed but it can be estimated from the reduced form equation in equation (42) as

And this will enable us to run equation (44a) using OLS as

$$y = z\rho + \lambda_k x_k + \varphi_1 \hat{v}_1 + \omega \qquad \text{44b)}$$

After estimating equation (44b), the endogeneity test can be carried out under $H_0 : \varphi_1 = 0$. The failure to reject the null hypothesis means that x_h is endogenous. We then predict the residual from equation (40) and run the

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structural equation with the predicted residual as one of the explanatory variables. Thus, we have

$$hrs\_sch_{ij} = \alpha_0 + \alpha_1 \ln rem_j + \alpha_2 \ln inc\_less\_rem_j + \alpha_3 loc_i + \alpha_4 hhsize_j$$
$$+\alpha_5 no\_of\_migrants_j + \alpha_6 ab\_spouse_j + \alpha_7 hours\_chd_j + \alpha_8 age\_chd_j \quad (45)$$
$$+\alpha_9 region_j + \alpha_{10} \hat{\upsilon}_j + \varepsilon_j$$

If it is established that α_{10} is statistically different from zero, we conclude that ln rem is endogenous. On the other hand, if we fail to reject the null hypothesis α_{10} is equal to zero, implies that ln rem can be treated as an exogenous variable in the child education ($hours\_sch$) model.

2. Weak Identification Test

For an instrument to be valid, it must be correlated with the endogenous regressor. The use of a weak instrument leads to bias of the IV estimates of the parameters of the model. The null hypothesis is that the instrument is weak whilst the alternative hypothesis is that it is not weak. The test statistic as proposed by Stock and Yogo (2002) is given as:

$$F = \left(\frac{N-L}{L_2} \frac{r^2 K_1}{1-r^2 K_1} \right)$$

$$L_2 = (L - L_1)$$

Where K_1, is the number of endogenous regressors, L is the number of exogenous regressors. L_1 is the number of excluded instruments. N is the number of observations and $r^2 K_1$ is the canonical correlation (Baum et al., 2007). If the test statistic is less than the critical values provided by Stock and Yogo (2002), we fail to reject the null hypothesis and this means that the instrument is weakly correlated with the endogenous regressors.

3. Omitted Variables Test

The approach used in this study to detect specification errors is the link test. The Link test performs a model specification test for single-equation models. The idea behind link test is that if the model is properly specified, it should not be possible to find any additional predictors that are statistically significant except by chance. After the regression command (in this case, OLS), link uses the linear predicted value (_hat) and linear predicted value squared (_hatsq) as the predictors to rebuild the model. The variable _hat should be a statistically significant predictor, since it is the predicted value from the model. In testing for omitted variables (s), emphasis is placed on the _hatsq. It must be such that _hatsq is insignificant. Thus, if _hatsq is significant, then the link test is significant and it means that either we have omitted relevant variable(s) or our link function is not correctly specified (Chen et al., 2003).

Data Source

This study used a cross- sectional data constructed from the Ghana Living Standards Survey round six (GLSS 6) to investigate the effect of remittances and the gender of the household head on child labour in Ghana. The GLSS 6 is a nationwide household survey designed to generate information on living conditions in Ghana. It was conducted by the Ghana Statistical Service (GSS) from 18th October 2012 to 17th October 2013. The Ghana Living Standards Survey Round Six (GLSS 6) like previous rounds focuses on the household as the key socio-economic unit and provides valuable information on the living conditions and well-being of households in Ghana. Generally, the GLSS data covers information on households including

the demographic characteristics of households, education, health, employment, migration and tourism, housing conditions, household agriculture, household expenditure, Income and their components, child labour and access to financial services, credit and assets.

Sample Design

The GLSS 6 was conducted using a stratified probability sampling technique. The universe of the survey is all population in Ghana living in private homes according to the 2010 population census. The sample frame of the survey comprises list of census enumeration areas (EAs) and their respective population and number of households. The EAs were defined as the primary sampling units (PSUs) and the households with the households with the EAs constituted the secondary sampling units (SSUs). There were four main domains of interest in the survey namely; Ghana as a whole, the ten administrative regions, urban and rural localities of residence and the three ecological zones (coastal, forest and savannah) (GSS, 2014).

In order to ensure that each of the domains was represented in the sample, the EAs were first stratified into the ten administrative regions. The EAs were also classified according to ecological zones and in each region, they were subdivided into rural and urban areas of location.

In all, the survey covered a nationally representative sample of 18,000 households in 1,200 enumeration areas. Of the 18,000 households, 16,772 were successfully enumerated leading to a response rate of 93.2% (GSS, 2014).

Conclusion

This chapter discussed the research design, the theoretical frameworks as well as the estimation techniques used for the study. Furthermore, it explained the sample design and source of data used for the study.

CHAPTER FIVE

EFFECT OF REMITTANCES AND GENDER ON CHILD LABOUR

Introduction

This chapter looks at regional distribution of child labour, the method used in estimating the effect of remittances and gender on child labour and goes on to discuss the results. As already indicated in chapter four, a problem commonly faced in estimating the causal impact of migrant remittances on child labour is endogeneity. In order to test for the presence of endogeneity, the Durbin-Wu-Hausman test was performed. The null hypothesis that there is no endogeneity was rejected because the test statistic was significant at 1% (χ^2 = 14.00 with p > 0.0002. I therefore conclude that log of remittances is endogenous. In order to correct the endogeneity problem, the instrumental variable approach was employed. Equation (21) in chapter four was then estimated using means of remittances transfer (moneygram, vigo, fast money transfer, bank accounts, post office, friends/ relatives etc.) as the instrument. After that the predicted values of the equation were plugged into the structural equation (i.e. equation 22) so as to obtain the results.

Results and Discussion

This section presents the major findings of the study and the discussion of the results from the analysis. The findings are presented in the form of tables, graphs and regression analysis showing the effect of remittances and the gender of household head on child labour in Ghana.
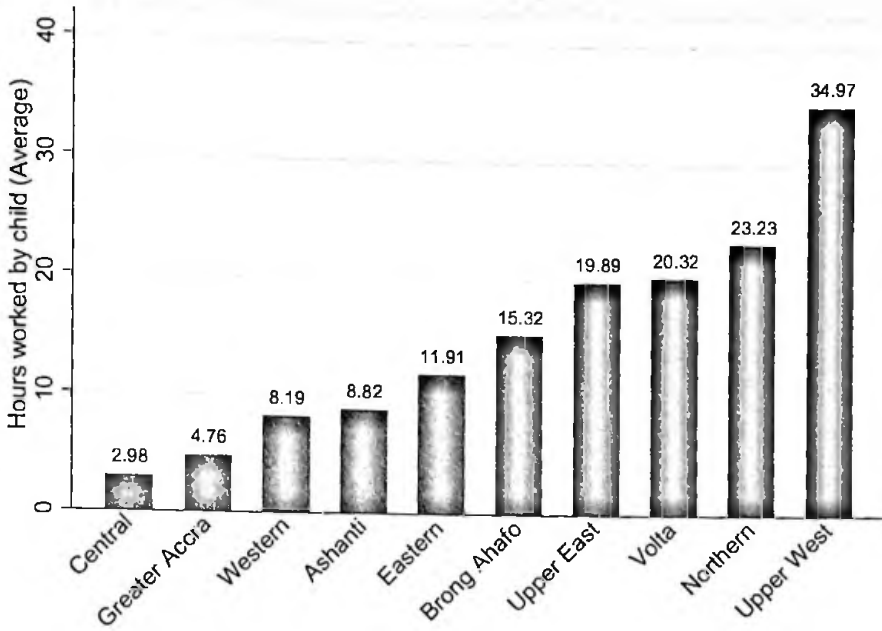
Figure 3: Regional distribution of child labour in Ghana

Source: Computed from GLSS 6

It is apparent from Figure 3 that in Ghana, the number of hours worked per week by children is higher in the Upper West region than any other region in the country. The total number of hours per week of child labour in the Upper West region is 34.97 hours and this is followed by 23.23 hours of child labour in the Northern region. This situation is to be expected because the Upper West region has the highest household size of 6.5 as compared with the national average of 4.0 (GLSS 6 report).

The summary statistics used for the analysis are presented in Table 4. Remittances are measured as the total remittances received by sample households both from internal and international sources. Hours of child labour are measured as the aggregate time spent by children in each household in different activities such as on-farm, off-farm, hired labour, etc. It is shown in Table 4 that the average number of hours of child labour per week is 39.138.

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The mean amount of remittances to households is GH¢157.59 with a standard deviation of GH¢3.67. This may be as a result of the increase in the number of the means of remittance transfers to households by both internal and international migrants. For instance, the introduction of mobile money transfer services by the various telecommunication companies has now created an opportunity for internal migrant workers to easily transfer remittances home. The average household income before remittances stands at GH¢4,179.72 with a standard deviation of GH¢3.11.

The average amount of remittances to households constitutes about 0.054% of the average amount of household income (without remittances). The average size of a household is about 7 people with a minimum of 2 and a maximum of 25. Again, the average age of the household head is 53 years with a minimum of 21 years and a maximum of 99 years. Finally, the summary statistics indicate that about 31% of household heads are formally educated. This means *that about* 69% have not had any formal education.

Table 4: *Summary Statistics of Child Labour Variable*

Variable	Mean	Std. Dev.	Min	Max
Hours_chd	39.138	42.973	0	250
rem	157.59	3.67	4.0	14,40
inc_less_rem	4179.72	3.11	1.74	234215
hhsize	6.933	3.385	2	25
Loc (rural=2, urban=1)	1.74	0.439	1	2
no._of_jobs	17.587	14.683	1	120
edu_bin	0.312	0.463	0	1
agey	54.428	15.238	21	99
Employed(employed=2; employed=1)	1.055	0.229	1	2
gender × remit	6.776	3.109	1.386	19.15
Regional dummies				
Central	0.074	0.262	0	1
Greater Accra	0.075	0.263	0	1
Volta	0.111	0.314	0	1
Eastern	0.098	0.297	0	1
Ashanti	0.105	0.306	0	1
Brong Ahafo	0.094	0.293	0	1
Northern	0.118	0.323	0	1
Upper East	0.098	0.298	0	1
Upper West	0.103	0.304	0	1
Number of observations	1368			

Source: Computed from GLSS 6, 2012/2013

The results of the effect of remittances and gender on child labour are presented in Table 7, Appendix A. It can be seen that out of 16,722 households, the sample has reduced to 1,368 due to missing observations in key variables. Column 2 reports the OLS results, which does not control for any potential endogeneity biases. According to the OLS estimates, a 1% increase in remittances, **lnrem** will lead to an increase in child labour per

week by 0.094 (i.e. 3.94÷100) of an hour other factors remaining constant. After instrumenting for remittances, the IV result shows that there is a negative and highly significant effect of lnrem on the number of hours a child in a household works indicating that OLS estimates are biased toward zero, which is consistent with results found by previous studies (Acosta 2011; Alcaraz et al. 2012; Bargain & Boutin, 2014; Coon 2016).

The change in the sign of the remittances coefficient from positive (for the OLS result) to a negative (for the IV result) is as a result of the fact that the OLS approach has not taken care of the endogeneity problem in the remittances-child labour relationship but this has been dealt with by the IV approach. According to the IV estimates (column 3), a 1% increase in remittances received by a household conditioned that the household head is a female decreases the time a child in that household works per week by about 0.14 [i.e.$(-46.701+32.881)÷100$] of an hour all other factors remaining constant. This is statistically significant at 5% level. Similarly, a 1% increase in remittances received by a household conditioned that the household head is a male decreases the time that a child in the household works per week by about 0.467 (i.e. $46.70 ÷ 100$) of an hour all other things being equal.

Based on the aforementioned results, irrespective of whoever is the head of the household, the total effect of remittances on child labour is negative. However, the negative effect is much higher in male headed households than it is in female-headed households. This result is consistent with the findings by Priyambada et al. (2005) and Bhalotra et al. (2003) from qualitative studies that indeed, in general, female-headed households have fewer resources and this has the tendency to influence their decision to send

children to work. Indeed, female heads of household particularly, in rural Ghana tend to be older and have fewer years of education than male heads of household (Food and Agriculture Organisation [FAO], 2012) Thus, these household heads adopt negative coping strategies, such as an increased participation of children in productive activities.

Household income also affects child labour. The OLS results indicate that all other factors remaining constant, an increase in household income, **lninc_less_remit** by 1% will lead to a reduction in the number of hours a child in that household works per week by about 0.038 (i.e. $3.80 \div 100$) of an hour and this is statistically significant at 1%. Similarly, the IV estimates show that an increase in household income by 1% will lead to a reduction in the number of hours a child in that household works per week by 0.038 (i.e. $3.81 \div 100$) of an hour all other factors remaining constant. This is also statistically significant at 1% and consistent with the study by Dayioğlu (2006) which finds evidence of a negative effect of household income on child labour.

In a study on Turkey, the author finds that an increase in household income whether in the form of an improvement in paternal earnings or non-wage income, is expected to bring about a reduction in child labour. Thus, the decision of the parent to send the child to work depends somehow, on the income of the household. If the income of the household is high, there may be no need for the child to work all other things being equal.

Both the OLS and IV estimates indicate that the effect of the age of the household head **agey,** on the number of hours a child works is positive and significant at 1% level. The OLS results show that an increase in the age of the household head by one year will lead to an increase in the number of hours

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a child works per week by 0.48 of an hour. The IV results on the other hand, indicate that an increase in the age of the household head by a year will increase the number of hours a child will work per week by 0. 44. This result is consistent with the findings by Idowu et al. (2013) which find that in the rural farm households of Oyo State in Nigeria, as the household head becomes more aged, there is a higher probability that the children will be used on the farm. It suggests that elderly household heads are a financial burden to their families and so contribute in increasing child labour.

Similarly, the OLS and IV results show that the effect of the size of the household **hhsize**, on the number of hours a child in that household works is positive. The OLS estimates indicate that an increase in the size of the household by one person leads to an increase in the number of hours a child in that household works per week by 4.6 hours all other factors remaining constant and it is significant at 1%. On the other hand, the IV results show that an increase in the size of the household will lead to an increase in the number of hours a child in that household will work per week by 4.6 hours all other factors held constant and also statistically significant at 1%.This finding is consistent with the study by Bayot (2007). In particular, the author finds that the presence of an additional child increases the probability of child labour.

Again, the employment status of the household **employed**, affects the number of hours a child in that household works. The OLS results show that all other factors held constant, if the head of a household is employed, the number of hours a child in that household works per week will reduce by about 20.24 hours as compared to a child living in a household in which the head is unemployed. This is significant at 1%. The IV estimates on the other

hand, indicate that if the household head is employed the number of hours a child in that household works will reduce by about 15.28 hours (ceteris paribus) as compared to a child living in a household in which the head is unemployed. This result is also significant at 1% and coincides with the findings by Wahba (2000) which concludes that children whose parents work in the public sector turn to have a greater probability of going to school than working. Thus, the probability of a child being sent to work is high when the parent is unemployed.

For both the OLS and IV estimates, the number of jobs the members of a household do, **no_of_jobs**, affects the number of hours a child in that household works. The OLS results indicate that holding other factors constant, if the number of jobs the household does increases by one, the number of hours a child in that household works per week will increase by 1.64 hours and this is significant at 1%. Similarly, the IV estimates on its part show that if the number of jobs the household does increase by one, the number of hours a child in that household works per week increases by 1.69 hours all other factors remaining the same. This is also statistically significant at 1%.

This result is expected because the tendency for a child to be engaged in child labour increases if the parents are engaged in many economic activities (e.g. farming and trading). According to Villamil (2002), households with their own enterprises, which include farming and home-based small-scale manufacturing, are likely to involve their children in production work.

The education of the household head, **edu_bin** influences child labour in Ghana. The OLS results indicate that all other factors being equal, if the head of the household has formal education the number of hours a child works

per week will be 2.65 hours less as compared to a situation where the household head has no formal education. On the other hand, the IV results show that if the head of a household has formal education the number of hours a child in the household works per week decreases by 0.99 as compared to a situation where the household head is not formally educated. Even though this result is statistically insignificant, it is intuitive because educated heads tend to know much about the benefits of schooling and so would send their children to school rather than allowing them to engage in child labour.

To a large extent, the location of a household loc, tends to have an effect on child labour. The OLS results show that on average, a child in a household located in a rural area engages in work per week by 0.17 of an hour more than a child in a household located in the urban area. In the same vein, the IV results reveal that a child in a household located in a rural area works 1.80 hours more per week than a child in a household located in the urban centre. These results are statistically insignificant but they make a lot of sense. Labour demand tends to be higher in rural areas because of the need for children in farm work. Besides, the cost of hiring children tends to be lower in the rural areas where monitoring and enforcement of labour laws are weak. Also, rural Ghana has poor infrastructure and lacks clean water and the effect is that most of the children residing there are often expected to draw water for domestic use and work on the farms.

We also include dummy variables for the regional location of the household where the child belongs to capture regional differences in child labour. The base region is the Volta region. The region in which a child lives may affect the number of hours the child works per week. Both the OLS and

IV results indicate that a child in a household in the Western region works for lesser number of hours than a child in a household in the Volta region. The OLS estimates reveal that a child living in a household in the Western region all other factors held constant, works 23.61 hours less than a child living in a household in the Volta region and this is statistically significant at 1%. In the same vein, the IV results show that, a child in a household in the Western region works 26.79 hours less than a child living in a household in the Volta region and this is statistically significant at 1%.

Even though child labour is common in the mining areas of the Western region, the practice is more intense in the Volta region because of child trafficking, prevalent at Kpandu, Gemeni Denu and the Trokosi system (ritual servitude) in the Ketu, Keta, North Tongu and South Tongu districts. Following the creation of the Volta lake, the livelihoods of communities along the lake have been severely altered leading to child labour becoming a main economic lifestyle and a coping strategy due to increasing levels of poverty (Kukwah, 2013).

Again, the OLS estimates reveal that a child living in a household in the Central region all other factors remaining constant, works 21.22 hours per week less than a child living in a household in the Volta region and this is statistically significant at 1%. On the other hand, the IV results show that, a child in a household in the Central region works 23.92 hours per week less than a child living in a household in the Volta region, ceteris paribus. This result is also statistically significant at 1%. Fishing is done in both the Central and Volta regions. However, the intensity of child labour in the Volta region is higher.

Both the OLS and IV results indicate that a child in a household in the Greater Accra region works for a lesser number of hours per week than a child in a household in the Volta region. The OLS estimates reveal that a child living in a household in the Greater Accra region all other factors remaining constant, works 14.54 hours per week less than a child living in a household in the Volta region and this is statistically significant at 5%. The IV results on the other hand show that, other factors being equal, a child in a household in the Greater Accra region works 0.53 hours per week less than a child living in a household in the Volta region. This result is, however, statistically insignificant.

With respect to the Eastern region, both the OLS and IV estimates indicate that all other things being equal, a child in a household in this region works for less number of hours than a child in a household in the Volta region. The OLS results show that a child in a household in the Eastern region works 24.10 hours per week less than a child in a household in the Volta region whilst the IV results indicate that a child in a household in the Eastern region works 24.81 hours less than a child in a household in the Volta region. Both results are statistically significant at 1%. Just like the Western region, in the Eastern region, child labour is common in the mining sector. However, it is not as intense as the child labour activities in the Volta region.

Additionally, the OLS results reveal that all other factors held constant, a child in a household in the Ashanti region works 27.21 hours per week less than a child in a household in the Volta region and statistically significant at 1%. On the other hand, the IV results show that other factors remaining constant, a child in a household in the Ashanti region works 22.88 hours per

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week less than a child living in a household in the Volta region. This is also statistically significant at 1%. Child labour activities in the Ashanti region can be found mostly in the agricultural and services sectors. For instance, children are normally engaged on the cocoa farms instead of being sent to school. In Kumasi itself, head porter (kaayayei) business is rife and some of those engaged in it are children. All these notwithstanding, however, the intensity of child labour in the Volta is higher than what is found in the Ashanti region.

Again, both the OLS and IV estimates show that, all other things being equal, a child living in a household in the Brong Ahafo region works for less number of hours per week than a child in a household in the Volta region. The OLS results indicate that a child in a household in the Brong Ahafo region works 27.72 hours per week less than a child in a household in the Volta region and statistically significant at 1%. The IV result on the other hand, reveal that a child living in a household in the Brong Ahafo region works 24.74 hours per week less than a child in a household in the Volta region. This is also significant at 1%.

Farming is the main activity of the people of the Brong Ahafo region. Thus, child labour is normally found in the farms of that region. However, the intensity of child labour in the Brong Ahafo region is not as high as the child labour activities found in the Volta region.

Similarly, in the Northern region, both the OLS and IV estimates indicate that all other things remaining constant, a child in a household in this region works for less number of hours per week than a child in a household in the Volta region and statistically significant at 1%. The OLS results show that a child in a household in the Northern region works 25.90 hours less than a

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child in a household in the Volta region whilst the IV results indicate that a child in a household in the Northern region works 37.18 hours less than a child in a household in the Volta region. Just like the Brong Ahafo region, the main economic activity in the region is farming. Some parents especially, on weekends and holidays send their children to work on the farms. Child labour can therefore be found in the Northern region. However, as compared to the Volta region, the intensity of child labour in the Northern region is less.

The OLS estimates reveal that a child living in a household in the Upper East region all other factors remaining constant, works 27.45 hours per week less than a child living in a household in the Volta region and this is statistically significant at 1%. On the other hand, the IV results show that, a child in a household in the Upper East region works 25.69 hours per week less than a child living in a household in the Volta region, *ceteris paribus*. This result is also statistically significant at 1%. In the Upper East region, child labour is mostly found on the farms and in illegal mining activities. However, the intensity of child labour activities is higher in the Volta region than in the Upper East region.

Finally, the OLS results reveal that all other factors held constant child, a in a household in the Upper West region works 10.26 hours per week less than a child in a household in the Volta region and statistically significant at 5%. On the other hand, the IV results show that, other factors remaining constant, a child in a household in the Upper West region works 8.47 hours per week less than a child living in a household in the Volta region. This is, however, statistically insignificant. Farming activity is the main activity of the people of the Upper West region. Thus, child labour is mostly found on the

farms. However, as mentioned earlier, the livelihoods of communities along the Volta Lake have been severely altered leading to high incidence of child labour. This makes the intensity of child labour in the region higher than what is found in the Upper West region. The result of the study in relation to the regions corroborates with the findings by Kukwaw (2013). The author finds evidence that child labour is more prevalent in Volta region than the other regions in Ghana because the categories of people working around the Volta Lake for fishing activities include children of fishermen in the community, children in bonded or forced labour, children in slavery and children who are orphans.

In most cases, boys around the Volta Lake paddle canoes, pull fishing nets, carry loads, cook for adult fishers, drain canoes as and when the need arises and run errands. On the other hand, the girls in the community are mostly into fish picking, sorting, packing, smoking, transporting and selling the fish. They also cook, do farm work, pull fishing nets and dive into deep waters to remove entangled nets.

Under- Identification Test

This test is conducted to see if the included instrument correlates with the endogenous regressor. The null hypothesis is that the equation is under identified. A rejection of the null hypothesis implies that the matrix has full rank and the equation is identified. The Klerbergen- Paap rk LM statistic shows a chi-square value of 13.06 and a p-value of 0.07. We therefore reject the null hypothesis at 10% level of significance and conclude that the equation is identified. This is seen in Table 8, Appendix A.

Weak Identification Test

This test is carried out to find out if the set of instrument(s) has a weak correlation with the endogenous regressors. A weak correlation with the endogenous regressors may lead to bias estimates of the IV coefficients. In the model the Kleibergen-Paap rk Wald F statistic exceeds the Stock-Yogo weak ID critical values at 10% maximal IV size. We therefore conclude that the model does not have problems with weak identification. The results are shown in Table 9, Appendix A.

Test of Omitted Variables

The specification link test was conducted for the model and the test output shows that the square of the predicted dependent variable has no explanatory power (see Table 7, Appendix A). It can therefore be concluded that the model does not suffer from specification problem.

Hypothesis Testing of Child Labour Variable

1. H_0 : Remittances and the gender of the household head do not affect child labour

H_a : Remittances and the gender of the household head affect child labour

The decision rule for the hypothesis is stated as follows: Reject the null hypothesis if the p-value of the effect of remittances and the gender of the household head on child labour is less than the significance level of 5% and fail to reject the null hypothesis if the p-value is greater than 5%.

The coefficient of the interaction variable for remittances and gender is 32.88 with a p-value of 0.018. Based on this result, we reject the null hypothesis and accept the alternative.

Conclusion

In the large body of literature, studies on the specific effect of remittances and the gender of the household head on child labour in Sub-Saharan Africa and for that matter Ghana remains thin on the ground. This chapter estimates the effect of remittances and gender of the household head, instrumented by means of transferring funds, on child labour in Ghana. As compared to other West African countries, the problem of child labour is significant in Ghana. The study finds that although with significantly different magnitudes, both remittance income and household income have significant effect on child labour. This study therefore coincides with previous studies by Joseph and Plaza (2010), Binci and Gannielli (2012) and Coon (2016). However, the findings of this study contradict the study by Nguyen and Nguyen (2013) which shows that there is no statistically significant effect of remittances on child labour in Vietnam.

Furthermore, the present study indicates that the supply of child labour in Ghana has to do with the gender of the household head. Generally, households headed by females tend to have a higher supply of child labour than male- headed households. This is so because female heads of household particularly, in rural Ghana tend to be older and have fewer years of education than male heads of household and tend to adopt coping strategies, such as an increase in the participation of children in productive activities.

CHAPTER SIX

EFFECT OF REMITTANCES ON CHILD WELFARE CLINIC ATTENDANCE

Introduction

This chapter explains the empirical strategy employed in estimating the effect of remittances on child welfare clinic attendance and discusses the results obtained. The empirical strategy used is the Poisson regression model. As stated earlier in chapter four, Poisson regression treats child welfare clinic attendance as a Poisson random variable with an intensity hypothesised to depend on stated explanatory variables Thus, in order to empirically investigate the effect of remittances on child welfare clinic attendance, equation (35) in chapter four was estimated.

Results and Discussion

This section presents the major findings of the study and the discussion of the results from the analysis. The findings are presented in the form of tables, graphs and regression analysis showing the effect of remittances on child welfare clinic attendance in Ghana.

It can be seen in Table 5 that on the average, remittances flow more to Ashanti region than any other region in Ghana. According to Gyimah-Brempong and Asiedu (2015), the Asante ethnic group in the Ashanti region has an extensive migration network and their culture requires older siblings to take care of the families left behind. This means that they will be more likely to remit more money back home. The region that received the lowest amount of remittances during the survey period was northern region. This is understandable because most of the migrants from the northern region are

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internal migrants who remit relatively smaller amounts of money to their households. Additionally, a greater amount of these remittances do not pass through formal channels and so are not captured in compiling total remittances flow.

Table 5: *Average Remittance by Regions*

Region	Average Remittance (GH□)
Western	160.00
Central	102.00
Greater Accra	185.00
Volta	167.00
Eastern	292.00
Ashanti	340.00
Brong Ahafo	283.00
Northern	88.00
Upper East	137.00
Upper West	98.00
Total	205.00

Source: Computed from GLSS 6, 2012/2013

Figure 4 shows the average child welfare clinic attendance by children in the various regions of Ghana during the survey period (2012/13). Brong Ahafo region had the highest average number of child welfare clinic attendance, followed by the Volta region. Ashanti, Central and Northern regions had the lowest child welfare attendance. A number of reasons may account for the low child welfare clinic attendance and these include lack of knowledge about services provided at child welfare clinics, limited availability of public health facilities, inadequate health professionals like midwives, community health officers, doctors, and financial difficulties.
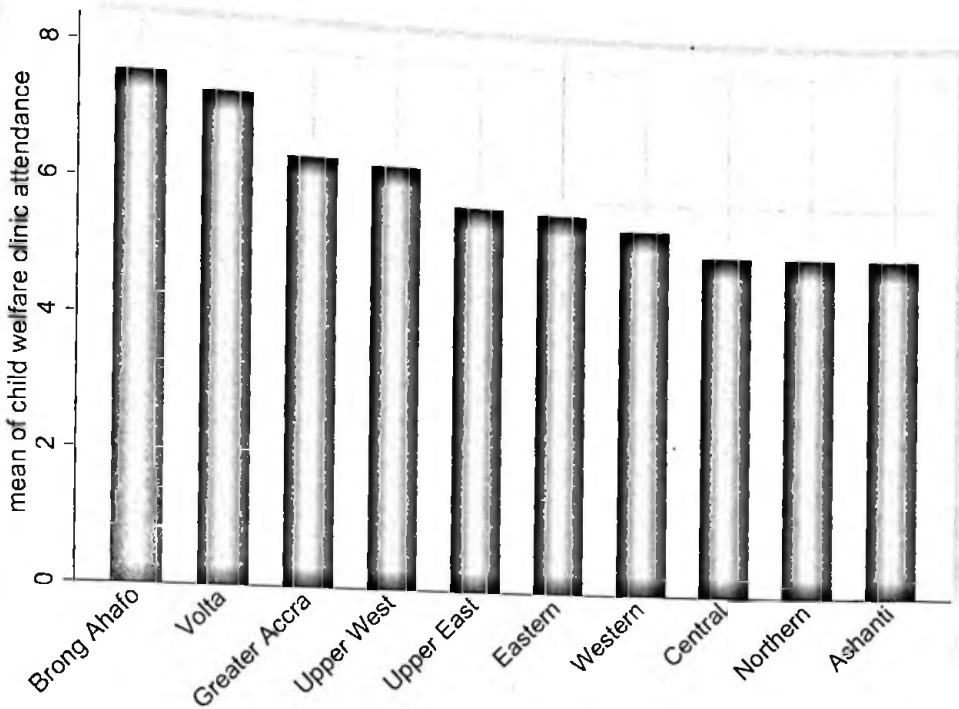
Figure 4: Child welfare clinic attendance by region

Source: Computed from GLSS 6 (2012/13)

From the Poisson regression results in Table 10, Appendix B it can be seen that the sample size for the study has reduced to 3,083 from a total number of 16,722 households. This is as a result of missing values for key variables in the model. The number of households from which children attended child welfare clinics was 3,123 but the sample size reduced as a result of missing observations. The study also indicates that there is a direct effect of remittances received by households on child welfare clinic attendance. A child in a household that experiences a GH¢1 increase in remittances is 0.017 (1.017-1) more likely to be sent by his/her mother to child welfare clinic which could in turn, lead to an improvement in the child's health, holding all other variables constant. This result is statistically significant at 1%.

The positive influence of remittances on child welfare clinic attendance may be because of the fact that some mothers need to spend money on transport to be able to get to the clinic or hospital. This result is consistent with the findings by Córdova (2006) on Mexico and Anton (2010) on Ecuador which conclude that remittances lead to improvement in child health. The result also coincides with the findings by Chauvet *et al.* (2013). These authors conclude that remittances seem to be much more effective in improving health outcomes for children belonging to the richest households.

As already mentioned, services provided at child welfare clinics are free in the Ghana. However, access to these services by mothers and their children is sometimes hindered by factors such as unavailability of public health care facilities, long distance to health posts etc. Thus, the receipt of remittances by households will help mothers and their children to attend child welfare clinics more regularly.

The income of the household has influence on child welfare clinic attendance. Higher incomes allow the mother to attend child welfare clinics more regularly and purchase more medical and nutritional inputs. As it is shown in Table 10, Appendix B, a child in a household that enjoys a one Ghana cedi increase in household income (without remittances) is 0.0120 more likely to be sent to a child welfare clinic and this is statistically significant at 5%. This has the tendency to improve the child's health status. The result presented in this study is consistent with studies by Case et al. (2002) and Malone (2014) for the United States. Malone (2014) finds evidence of an improvement in child health resulting from an increase in family income.

The poor financial status of the household has a negative influence on child welfare clinic attendance. Other factors remaining constant, if a household is poor, the nursing mother in the household is 0.063 less likely to take her child to a child welfare clinic than a rich household. The result is significant at 5% and consistent with the findings by Currie et al. (2007) for England. Children in rich households may attend more child welfare clinics than children living in poor households. This is because in the absence of a public hospital or clinic in a particular area, children and their mothers from rich households can afford to attend child welfare clinics at private health posts or travel to the nearest health post for the service.

Migration has influence on child welfare clinic attendance and this goes to improve the health of the child. Other things remaining constant, if a child is in a household that has experienced an increase in the number of migrants by one, he/she is 0.103 more likely to attend a child welfare clinic. This is statistically significant at 1% and consistent with the findings by Hildebrandt et al. (2005) on Mexico. Investigating the impact of international migration on child health outcomes in rural Mexico, the authors find that children in migrant households have lower rates of infant mortality and higher birth-weights.

Parental education influences child welfare clinic attendance. Holding other factors constant, a child is 0.049 more likely to attend a child welfare clinic if the head of the household in which the child resides is educated. This result is statistically significant at 10% and consistent with the findings by Baye and Fambon (2009) which find a positive effect of parental education on child health in Cameroon.

Regional dummies have some effect on child welfare clinic attendance. For instance, results in Table 10 show that all other factors being equal, a child in a household in the Greater Accra region is 0.160 more likely to attend a child welfare clinic with his/her mother than a child in a household in the Western region. This is significant at 1% and it is probably due to the fact that there appears to be more child welfare clinics in the Greater Accra region than in the Western region.

Similarly, a child in a household in the Volta region is 0.347 more likely to attend a child welfare clinic with the mother than a child in a household in the Western region and this is significant at 1%. Several reasons may account for this result in the Volta region among which are greater public education on child welfare clinic attendance, availability of child welfare clinics and easy accessibility of such clinics.

Again, the study results show that all other factors held constant, a child living with his/her mother in a household in the Upper East region is 0.094 more likely to attend a child welfare clinic than a child living with the mother in a household in the Western region and this is statistically significant at 10 %.

It is also evidenced in the study results in Table 10 that holding all other factors constant, a child in a household in the Upper West region is 0.230 more likely to attend a child welfare clinic with the mother than a child in a household in the Western region. This result is statistically significant at 1%. The Upper West region is a relatively small region and so it is easier to provide such child welfare clinics than in the Western region.

Furthermore, the results in Table 10 indicate that all other factors remaining constant, a child living with the mother in a household in the Brong Ahafo region is 0.362 more likely to attend a child welfare clinic than children in the Western region and it is also statistically significant at 1%.

However, holding other factors constant, a child in a household in the Ashanti region is 0.083 less likely to attend a child welfare clinic than a child in a household in the Western region. This result is significant at 10%. The Ashanti region is a relatively larger region and populous region than the Western region. Thus, there may be a challenge in ensuring that all nursing mothers in the Ashanti region have access to child welfare clinics.

Finally, a child in a household in the Northern region is 0.016 less likely to attend a child welfare clinic than a child in a household in the Western region all other factors being equal. However, this result is statistically insignificant. Ignorance on the part of mothers has contributed to the low child welfare clinic attendance in the Northern region.

Model Specification Error Test

Since the _haq is 0.04 and _hatsq is 0.1312 and for that matter insignificant, it implies that the link function is correctly specified. Thus, we can only by chance, find additional predictors that are statistically significant.

Test of Goodness-of-Fit

The Hosmer-Lemeshow goodness of fit test has a large p-value of 0.623 indicating that the model fits the data. The overall goodness-of-fit, measured by the pseudo-R square stands at 0.0241.

Hypothesis Testing of Child Welfare Clinic Variable

2. H_0 : Remittances do not influence child welfare clinic attendance

Ha: Remittances influence child welfare clinic attendance

The decision rule for the hypothesis is stated as follows: Reject the null hypothesis if the p-value of the effect of remittances on child welfare clinic attendance is less than the significance level of 5% and fail to reject the null hypothesis if the p-value is greater than 5%. The incidence rate ratio for the log of remittances is 1.017208 with a p-value of 0.004. Based on this result, we reject the null hypothesis and accept the alternative.

Conclusion

In recent years, there have been significant and steady declines in the child and infant deaths in Ghana and a simultaneous increase in remittances. These remittances differ from other types of funds received by Ghana because they flow directly to households and are relatively stable and quite large. In view of this, it is important to measure the effect of remittances on child welfare clinic attendance. The study in this chapter indicates that in spite of the introduction of the National Health Insurance Scheme (NHIS) coupled with the fact that services provided at child welfare clinics are virtually free, remittances lead to an increase in child welfare clinic attendance which in turn, improves child health. This result corroborates the findings by Lopez-Cordova (2006), Anton (2010) and Nagarajan (2009).

However, it contradicts the study by Chauvet et al. (2013) which indicate that even though remittances lead to a decrease in mortality, there is a larger countervailing impact on medical brain drain and this in turn, worsens mortality.

CHAPTER SEVEN

EFFECT OF REMITTANCES ON CHILD EDUCATION

Introduction

This chapter focuses on the empirical strategy employed in estimating the effect of remittances on child education and discusses the results obtained. Just as with child labour, a problem commonly faced in estimating the causal effect of migrant remittances on child education is endogeneity. In order to test for the presence of endogeneity, the Durbin-Wu-Hausman was performed. The null hypothesis that the natural log of remittances can be treated as exogenous was rejected because the test statistic was significant at 1% (χ^2 =13.52 with p >0.0002). The instrumental variable approach was therefore employed to address the problem of endogeneity.

In previous research, different instruments have been used to estimate the effect of remittances on education. These include historical migration rates and the presence of migration networks used by Hanson and Woodruff (2003) and McKenzie and Rapoport (2011), and Acosta (2011) and exchange rate appreciation used by Yang (2008). However, the least controversial instrument is the means of transferring funds (as proxy for the availability of remittance transfer offices) used by (Calero et al., 2009). Thus, this instrument was used in estimating equation (40) in chapter four. After that the predicted values of equation (40) were plugged into the structural equation (i.e. equation 41).

Results and Discussion

This section presents the major findings of the study and the discussion of the results from the analysis. The findings are presented in the form of

tables and regression analysis showing the effect of remittances on child education in Ghana.

From the summary statistics in Table 6, it can be seen that the mean amount of remittances to households is GH¢177.33 with a standard deviation of GH¢4.10. Children living in households that receive remittances flow are able to spend more hours in school instead of working to earn additional income for the household. The receipt of remittances is expected to relax the liquidity constraint faced by the household. On average, about seven people live in a household and this can affect child schooling. Children living in households with a large size may spend less number of hours in school because they may be spending some of their time serving the family by doing house chores. In the sample, the average age of a child is 10 years with a standard deviation of about 4 years.

Again, about 10% of the households have one of their spouses not living in the household. In that case, the child may have extra housework to do and this could affect the total number of hours the child spends in school per week. Furthermore, on average children spend about 11 hours per week on child labour. This has the tendency to affect the number of hours they spend in school. Finally, children spend an average of about 27 hours per week in school with a standard deviation of 10 hours. This is because some of the children spend long hours in traffic before getting to school and others spend some time doing house chores before going to school.

Table 6: *Summary Statistics of Child Education Variables*

Variable	Mean	Std. Dev	Min	Max
remit	177.33	4.10	0	50001
loc(rural)	1.627	0.4837	1	2
inc_less~t	4586.30	3.35	0.92	209693
Hhsize	7.133	3.283	2	25
hours _chd	11.495	24.350	0	250
age _chd	8.844	3.203	2	14
no _of _migrants	0.118	0.507	0	5
ab_spouse	0.10473	0.30622	0	1
hrs _sch	27.197	10.030	0	42
Region (base=Western)				
Central	0.0656	0.2476	0	1
Greater Accra	0.0509	0.2197	0	1
Volta	0.0930	0.2904	0	1
Eastern	0.120	0.3250	0	1
Ashanti	0.1093	0.3120	0	1
Brong Ahafo	0.1025	0.1125	0	1
Northern	0.1223	0.3278	0	1
Upper East	0.1506	0.3577	0	1
Upper West	0.1081	0.3105	0	1

Source: Computed from GLSS 6, 2012/2013

dues may be turned away from school. For some children, their homes or villages are located many miles away from their schools and so they need money to travel to and from school. Thus, remittance flow to households would lead to an increase in the number of hours the child spends in school all other factors remaining constant.

Again, holding other factors constant, the IV results show that a child who lives in the rural area spends an average of about 2.05 hours less in school per week than a child living in the urban area. This result is statistically significant at 1% and coincides with the findings by Edward and Ureta (2003). According to the authors, in urban areas, remittances increase the number of children attending school beyond Grade 6 by 50%. In Ghana, schools in rural areas commonly face challenges such as poverty, geographic isolation, insufficient resources, and poor teacher quality in comparison with their urban counterparts. In addition, most of the children in the villages travel for long hours on daily basis just to access formal education in nearby villages or towns. Besides, some of the children have to help their parents at home before going to school every morning. All these account for the lesser number of hours that children in the rural areas spend in school.

For household income, the IV results show that holding other factors constant, a 1% increase in household income (excluding remittances) **lninc_less_remit** will lead to an increase in the number of hours a child in a household spends in school per week by 0.003 (0.338÷100) of an hour and this is statistically significant at 5%. This implies that household income plays an important role in determining the number of hours a child spends in school. An increase in the income of the household will therefore improve child

schooling. This result is consistent with the study by Kalaj (2010) which finds evidence of a positive effect of household income on education in Albania.

The study further indicates that the absence of a spouse (ab_spouse) in a household will lead to a reduction in the time spent in school per week by a child living in that household by about 1.16 hours all other things being equal. This result is statistically significant at 5% and consistent with the study by Saucedo (2006) which states that in Mexico, children living with both parents have a greater opportunity to focus on schooling. Thus, children living with both parents have a greater chance of spending more number of hours in school.

Furthermore, the study indicates that holding other factors constant, if the number of migrants in a household increases by one person, it will lead to a decrease in the time spent in school per week by a child living in that household by about 0.55 of an hour. This result is statistically significant at 5%. The migration of a productive family member may force children in the household to engage in economic activities to make up the household's lost income or to replace the absent parent in his former job. This will certainly have an adverse effect on the time spent by the children in school.

Bansak and Chezum (2009) examine the effects of migration and remittances on children's schooling in Nepal and find that increasing the number of absentee adults significantly reduces the probability of being in school for children of all ages. In a related study, McKenzie and Rapoport (2011) find that the migration of working aged household members forces children to take on additional household responsibilities and work to fill the short term income deficit in the family thereby reducing school attendance.

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According to UNICEF (2008), child labour is one of the obstacles on the way to the Millennium Development Goal of universal primary education. The number of hours a child works outside school can affect child schooling. In the study, the IV results indicate that holding other factors constant, an increase in the number of hours a child works outside school by an hour will lead to reduction in the number of hours spent in school per week by 0.05 of an hour. This result is statistically significant at 1% and coincides with the findings by Gunnarsson et al. (2006). The authors find that child work has the potential to harm a child's school outcomes by limiting the time spent on study, or leaving the child too tired to make efficient use of the time in school.

The study results also indicate that all other things being equal, a 1% increase in a child's age will lead to an increase in the number of hours spent in school per week by 0.19 of an hour and this is statistically significant at 1%. This result is consistent with the findings by Olaniyan (2011) which provides evidence that the older a child becomes, the higher the probability of attending school in Nigeria.

Again, the results indicate that household size has a negative effect on child education. All other factors held constant, a 1% increase in household size will lead to a reduction in the number of hours a child spends in school per week by 0.19 of an hour. This result is statistically significant at 5% and coincides with the findings by Shen (2017) which finds that limiting family size has beneficial consequence for child education in China.

With regards to regional effects, the study shows that the effect of remittances on child education varies from region to region. Using Western region as the base region, the study indicates that holding other factors

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constant, a child living in a household in the Central region spends an average of 1 hour 12 minutes more in school per week than a child living in a household in the Western region. Although statistically insignificant, this may be as a result of the high level of illegal mining (galamsey) that is prevalent in the Western region. The Western region has rich mineral resources like gold and diamond and so there is the tendency for most children to abandon school just to engage in illegal mining.

Again, the study shows that other factors held constant, a child living in a household in the Greater Accra region spends an average of about 0.67 of an hour more in school per week than a child living in a household in the Western region. This result is also statistically insignificant.

Furthermore, the results indicate that on average a child living in a household in the Volta region spends an average of about 3.33 hours less in school per week than a child living in a household in the Western region all other things being equal. This result is statistically significant at 1%. The reason for this outcome may be as a result of the fact that in the Volta region, some of the children are engaged in fishing and farming instead of being in school.

Again, the study shows that on average, a child living in a household in the Eastern region spends an average of about 2.36 hours more in school per week than a child living in a household in the Western region holding other factors constant. This is statistically significant at 1 % and it may be as a result of the aforementioned reason- high level of illegal mining prevalent in the Western region. Most of the children may abandon school and engage in illegal mining in order to support their respective households.

The study indicates that on average, a child living in a household in the Ashanti region spends about 2.80 hours more in school per week than a child living in a household in the Western region, *ceteris paribus*. This result is statistically significant at 1% and it may be due to the same reason earlier mentioned- high level of illegal mining prevalent in the Western region.

Under-Identification Test

This test is conducted to see if the included instrument correlates with the endogenous regressor. The null hypothesis is that the equation is under identified. A rejection of the null hypothesis implies that the matrix has full rank and the equation is identified. The result of the under identification test is shown in Table 12, Appendix C. Based on the result, we reject the null hypothesis at 1% level of significance and conclude that the equation is identified.

Weak Identification Test

This test is conducted to find out if the set of instrument(s) has a weak correlation with the endogenous regressors. A weak correlation with the endogenous regressors may lead to bias estimates of the IV coefficients. In the model the Kleibergen-Paap rk Wald F statistic exceeds the Stock-Yogo weak ID critical values at 10% maximal IV size. We therefore conclude that these models do not have problems with weak identification. The results are indicated in Table 13, Appendix C.

Model Specification Error Test

The specification link test was conducted for the model and the result shows that the square of the predicted dependent variable has no explanatory

power (see Table 11).Thus, it can be concluded that the model does not suffer from specification error.

Hypothesis Testing of Child Education Variable

3. H_0: Remittances do not influence investment in child education.

Ha: Remittances influence investment in child education.

The decision rule for the hypothesis is stated as follows: Reject the null hypothesis if the p-value of the effect of remittances on child education is less than the significance level of 10 % and fail to reject the null hypothesis if the p-value is greater than 10 %. The coefficient for the natural log of remittances is 1.000 with a p-value of 0.058. Based on this result, we reject the null hypothesis and accept the alternative.

Conclusion

Remittances sent by migrant workers are becoming an indispensable part of the household budget in Ghana. The amount of internal and international remittance income in the country has been increasing over the years. This chapter aims at investigating the effect of remittances on the number of hours a child spends in school. Using the GLSS 6 and adopting the instrumental variable approach, the study finds that the number of hours a child spends in school increases as the amount of remittances to the household increases. This coincides with the findings by Amuedo- Dorantes et al., (2010) for Haiti and Binci and Gianelli (2012) in their study of Vietnam. The study also reveals that the location of the household in which the child lives has a significant effect on child education. On average, children living in households in urban areas spend more time in school than children living in rural areas. Furthermore, the study indicates that the financial status of the household in

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which the child lives has a significant effect on the number of hours a child spends in school. Generally, children living in poor households tend to spend less number of hours in school than children living in non-poor households.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The three preceding chapters have demonstrated that, indeed, migrant remittances reduce child labour, increase child welfare clinic attendance (which has the tendency to improve child health) and improve child education. The eighth chapter of the thesis presents the summary, conclusions and policy recommendations as well as the limitations of the study. In addition, the chapter presents areas for future research.

Summary

The main motivation for carrying out this research was to test and confirm the mix-results nature of the remittances-child welfare studies especially in developing countries. The general objective of the study was to examine the effect of migrant remittances on child welfare using the GLSS 6 data.

First, the study examined the effect of remittances and gender on child labour using the number of hours a child works per week as a proxy for child labour. The instrumental variable 2SLS approach was applied in order to tackle for endogeneity problems. The instrumental variable used for this study was the means of remittances transfer.

Second, the effect of remittances on child welfare clinic attendance was investigated using the Poisson regression model. This model was used because it is more appropriate for count outcomes

Third, the effect of remittances on child education was investigated using the number of hours a child spends in school per week as a proxy for

child education. To address the endogeneity of remittances, the study employed the instrumental variable 2SLS approach.

The results revealed that remittances have a negative and significant effect on child labour in both female and male-headed households. However, the effect is greater in male-headed households than in female-headed households. Furthermore, the results show that remittances have a positive and significant effect on child welfare clinic attendance. Finally, the thesis findings indicate that remittances flow has a positive and significant influence on the number of hours a child spends in school thereby, enhancing child education.

Conclusions

The study has shown that migrant remittances contribute negatively and significantly to child labour decisions in Ghana. Furthermore, the gender of the household head influences child labour. The negative effect of remittances on child labour is much higher in male-headed households than it is in female-headed households.

Again, the study has indicated that remittances are positively associated with child welfare clinic attendance which has the tendency of improving child health in the country. Migration also tends to influence child welfare clinic attendance positively. This is as a result of the health knowledge which the mother is likely to gain from the migrant household member.

Finally, using the number of hours spent by children per week to measure child education, the study has shown that both remittances and migration significantly influence child education. For instance, whereas remittances have a positive effect on child education, migration tends to have an adverse effect on child education. This is so because the child may have to

spend extra time to do house chores before going to school as a result of the absence of the migrant household member.

Policy Recommendations

- Considering the negative effect that remittance income has on child labour and its positive effect on child welfare clinic attendance and child education, it is important that policies are put in place to increase remittances flow in Ghana. To facilitate remittances flow, the government through the Ministry of Finance and Bank of Ghana should encourage and facilitate the establishment of more mobile money transfer outlets by improving infrastructure and strengthening social capital networks in the country.

- The government through the Bank of Ghana should reduce the transactions cost of remittances and provide safe and profitable financial instruments so as to attract more remittance flow to the households.

- Again, the positive effect of household size on children's hours of work suggests the need for the government through the Ministry of Health to develop effective programmes such as family planning education and sale of contraceptives at affordable prices in order to control birth in Ghana. If birth control is effectively carried out, it could reduce the financial pressure of feeding a large family and consequently lead to a reduction in the demand for child labour.

- Since remittances sent to male-headed households reduce the number of hours of child labour compared to remittances to female-headed

households, migrants should channel remittances to male members of their households if their objective is to reduce child labour

- The Ministry of Health in collaboration with the Bank of Ghana should lower the transactions cost of remittances received by lactating mothers so as to encourage them to attend child welfare clinics regularly. This will go a long way to improve child health in Ghana.

Study Limitations and Suggestions for Further Research

In a developing country such as Ghana, the accessibility of both qualitative and quantitative data remains a serious concern, as people are generally reluctant to disclose the amount of remittances and information regarding their end use. The monitoring and appraisal processes of remitted flows present serious challenges for the field, bearing in mind that the majority of databases only include flows transferred through official channels. There are quite a number of migrants that tend to send remittances to their households through unofficial channels. With such high levels of unrecorded remittances, the assessment of the effect of remittances on child welfare outcomes turns to be underestimated using the GLSS 6 data.

Also, the GLSS 6 lacks the complete range of data required for exploring all aspects of child welfare. For instance, information on child welfare indicators such as child mortality and child nutrition (height-for-age, weight-for-height and weight-for-age z-scores) is unavailable for any thorough empirical study to be carried out on them.

The findings in this thesis present a new perspective for future research. Thus, two avenues are proposed for future research. First, since the present study does not distinguish between international and internal

remittances, it is suggested that future research should focus on the different impacts internal and international remittances have on child welfare outcomes. Second, future research should investigate whether the gender of the migrant matters in improving child welfare.

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Table 7: *Results of Effects of Remittances and Gender on Child Labour*

Dependent Variable:	hours_chd	
Variable (1)	OLS (2)	IV2SLS (3)
ln *remit*	3.943** (1.866)	-46.701** (19.671)
ln *inc _ less _ remit*	-3.397*** (0.785)	-3.808*** (0.969)
gender × *remit*	-2.992** (1.399)	32.881** (13.946)
gender (*female*)	19.475** (7.735)	-170.120** (73.759)
hhsize	4.591*** (0.250)	4.613*** (0.309)
Agey	0.483*** (0.059)	0.439*** (0.075)
Employed	-20.241*** (3.755)	-15.279*** (5.018)
edu _ bin	2.648 (1.862)	-0.898 (2.676))
no _ of _ jobs	1.638*** (0.054)	1.688*** (0.069)
loc(rural)	0.168 (1.702)	1.801 (2.195)
Region (base= Volta) Western	-23.607*** (3.613)	-26.791*** (4.629)
Table 7, continued Central	-21.217***	-23.923***

	(4.698)	(5.896)
Greater Accra	-14.535**	0.530
	(5.761)	(9.188)
Eastern	-24.097***	-24.814***
	(3.173)	(3.929)
Ashanti	-27.205***	-22.876***
	(3.168)	(4.255)
Brong Ahafo	-27.715***	-24.739***
	(3.281)	(4.212)
Northern	-25.902***	-37.184***
	(3.476)	(6.113)
Upper East	-27.448***	-25.692***
	(3.876)	(4.835)
Upper West	-10.260**	-8.473
	(4.276)	(5.326)
Constant	-0.297	259.052***
	(13.976)	(101.525)
Number of observations	1,368	1,368
Adjusted R-squared	0.647	0.490
Under -identification		13.068
P-value of under-identification		0.071
Weak identification		60.31
P-value –Link test		0.000
(_hatsq)		0.102

*p<0.10 **p<0.05 ***p<0.01. Heteroskedasticity-robust standard errors in parentheses

Source: Computed from GLSS 6, 2012/2013

Table 8: *Results of Under-Identification Test- Child Labour*

Variable	Model	LM Statistic	P-value
Lnrem	IV	$\chi^2(1)= 13.36$	0.064

Source: Computed from GLSS-6, 2012/2013

Table 9: *Result of Weak Identification Test-Child Labour*

	Model Hrs_chd
Kleibergen-paap Wald rk F statistic	60. 31
Stock-Yogo weak ID test critical values:	
10% Maximal IV Size	16.38
15% Maximal IV Size	8.96
20% Maximal IV Size	6.66
25% Maximal IV Size	5.53

Source: Computed from GLSS-6, 2012/2013

Table 10: *Poisson Regression Model for Child Welfare Clinic Attendance*

Dependent Variable: No. of Child Welfare Clinic attendance	IRR	Marginal Effect	P>z
LnRemit	1.017***	0.017***	0.004
	(0.006)	(0.006)	
Lninc_less_remit	1.020**	0.020**	0.038
	(0.010)	(0.010)	
edu_bin	1.049*	0.049*	0.092
	(0.030)	(0.030)	
Poor	0.940**	-0.062**	.036
	(0.028)	(0.028)	
no_of_migrants	1.103***	0.103***	0.001
	(0.034)	(0.031)	
Central	0.965	-0.035	0.562
	(0.060)	(0.061)	
Greater Accra	1.161***	0.149***	0.005
	(0.062)	(0.053)	
Volta	1.347***	0.298***	0.000
	(0.063)	(0.047)	
Eastern	1.038	0.037	0.492
	(0.057)	(0.055)	
Ashanti	0.921*	-0.083*	0.084
	(0.044)	(0.048)	
Brong Ahafo	1.362***	0.309***	0.000
	(0.108)	(0.080)	
Northern	0.984	-0.016	0.735
	(0.048)	(0.048)	
Table 10, continued Upper East	1.094*	0.085*	0.079
	(0.056)	(0.051)	

Upper West	1.230*** (0.060)	0.207*** (0.049)	0.000
Constant	4.462*** (0.422)	4.496*** (0.095)	0.000
Sample size: 3112			
Pseudo R^2=0.0241			

Hosmer-Lemeshow: Prob> chi^2= 0.6231

Link test _hat=0.000   _hatsq=0.1312

*p<0.10 **p<0.05***p<0.01.Heteroskedasticity-robust standard errors in parentheses

Source: Computed from GLSS 6, 20012/2013

Table 11: *Results of the Effect of Remittances on Child Education*

Dependent Variable:	hours_sch	
Variable (1)	OLS (2)	IV 2SLS (3)
ln *rem*	-0.352** (0.139)	1.001* (0.528)
ln *inc_less_remit*	0.403*** (0.151)	0.338** (0.155)
*hours*_chd	-0.047*** (0.010)	-0.047*** (0.010)
loc(urban =, rural = 1)	-2.855*** (0.410)	-2.046*** (0.533)
hhsize	-0.133 (0.069)	-0.186** (0.073)
no._of_migrants	-0.255 (0.302)	-0.548 (0.348)
ab_spouse	-0.368 (0.506)	-1.161** (0.568)
age_chd	0.197*** (0.057)	0.191*** (0.046)
Region(base=Western)		
Central	1.040 (1.000)	1.123 (1.017)
Greater Accra	1.056 (1.151)	0.673 (1.157)
Volta	-3.752*** (0.961)	-3.333*** (1.000)
Eastern	2.063** (0.806)	2.360*** (0.867)

Table 11, continued

Ashanti	2.904***	2.798***
	(0.867)	(0.887)
Brong Ahafo	0.904	0.809
	(0.877)	(0.879)
Northern	-2.052**	-1.195
	(0.838)	(0.946)
Upper East	0.337	0.654
	(0.830)	(0.854)
Upper West	0.902	-0.961
	(0.891)	(0.916)
Constant	29.707***	21.368***
	(1.759)	(3.350)
Sample size	2520	2520
R-squared	0.288	0.203
Under-identification		242.96
P-value of under-identification		0.000
Weak identification		30.07
P-value –link test		0.000
_hatsq		0.133

*** p<0.01, ** p<0.05, * p<0.1. Heteroskedasticity-robust standard errors in parentheses

Source: Computed from GLSS 6, 2012/2013

Table 12: *Results of Under- Identification Test- Child Education*

Variable	Model	LM Statistic	P-value
ln *rem*	IV	$\chi^2(1)= 242.96$	0.000

Source: Computed from GLSS 6, 2012/2013

Table 13: *Results of Weak Identification Test- Child Education*

	Model: hours_sch
Craigg Donald Wald F statistic	28.59
Kleibergen-paap Wald rk F statistic	30.07
Stock-Yogo weak ID test critical values:	
10% Maximal IV Size	16.38
15% Maximal IV Size	8.96
	6.66
20% Maximal IV Size	5.53
25% Maximal IV Size	

Source: Computed from GLSS 6, 2012/2013