

UNIVERSITY OF GHANA

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**REMITTANCE AND HOUSEHOLD EXPENDITURE
BEHAVIOUR IN GHANA**

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DECLARATION

I hereby declare that this thesis is the result of my original work done under the guidance of my supervisors. This study has not been presented by anyone in this university or any other university for the award of an academic degree. Scholarly works that are cited have been duly acknowledge through referencing. I take responsibility for the content of this work.



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ABSTRACT

This thesis analyses the effect of remittance on household spending behaviour in Ghana. The propensity scores matching estimation technique, which makes it possible to reduce selection bias associated with the use of observational data, is employed to assess the average effect of remittances on several budget shares of households. Using data from the sixth round of the Ghana Living Standard Survey, the results generally give some indications of a productive use of remittances.

Generally, remittance receiving households are associated with a decline in food expenditure share. Also, households that receive any form of remittance are associated with increased spending on education and health compared to those that do not. Specifically, the result also indicates that households that receive internal remittance spend more on education and health. However, the receipt of external remittance does not support a productive use of remittance. Similarly, households that receive both internal and external remittance does not support a productive use of remittances as they are spent more on other non-food items. With the likelihood of positively impacting human capital development, the study recommends the implementation of suitable policies that facilitates the transfer and receipt of remittances at a minimal cost. Also, government need to provide quality education and healthcare facilities so that households can maximize the returns from utilization.

Keywords: remittances, household expenditure, propensity score matching, sub Saharan Africa, Ghana

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LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
ATT	Average Treatment Effect on the Treated
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GLSS	Ghana Living Standard Survey
GSS	Ghana Statistical Service
LSMS	Living Standard Measurement Survey
NELM	New Economics of Labour Migration
NN	Nearest Neighbour
PSM	Propensity Score Matching
USA	United States of America
USD	United States Dollars

CHAPTER ONE

INTRODUCTION

1.0 Background

The inflow of remittances has become an important source of income in many developing countries (De & Ratha, 2012; Lubambu, 2014). External remittances to developing countries have seen a rapid increase relative to other transfers in recent years. According to the World Bank, in 2018, global remittance grew by 10% to USD689 billion, out of which USD528 billion went to developing countries (World Bank, 2018). The World Bank also estimates that external remittance was about USD430 billion to developing countries in 2016 (World Bank, 2017a). In 2015, about USD67 billion remittance inflows was received by African countries, representing about 12% of the total global remittances' inflow. Also, about USD39 billion representing over 50% of this amount was received by countries in Sub Saharan Africa (SSA) with countries such as Nigeria, Ghana, Zimbabwe, Senegal, Kenya and Uganda receiving the majority (World Bank, 2016).

According to Sander (2003), remittances are cash (money) sent from a person or household to another. As a households' livelihood strategy, Boakye-Yiadom & Lambon-Quayefio, (2018) define remittance as transfers received in cash or in kind from one household to another, and for which it is not compulsory to repay back. External (International) remittances are inflows received from those who have travelled out of their home country, and other external non-governmental institutions. On the other hand, internal (domestic) remittances are the inflows received either from those who have left their home village, town, or city to work somewhere else within their home country or from governments and other non-governmental institutions. Remittance receipt may be

on some regular basis such as weekly, monthly, quarterly or annually or may be irregular as well. From the literature, remittances are mostly received from migrant household members (see for example: Brown, 1994; Lucas & Stark, 1985). However, remittances do not solely come from migrant workers of a household. Households without migrant members may also receive remittance from sources including government social protection programs and Non-Governmental Organisations (Boakye-Yiadom, 2008).

In Ghana, a significant proportion of the population depends on remittance inflows for survival. From the early 1970's to the 21st century, external migration has been increasing steadily. As a result, total external remittance flow to Ghana increased from USD31 million in 1999 to USD4.9 billion in 2015 (World Bank, 2016). In 2015, Ghana received a total remittance of USD4.9 billion, representing 7% of overall remittances into Sub Saharan Africa, 13.6% of Gross Domestic Product (GDP) and was only second to Foreign Direct Investment (FDI) in terms of largest external flows (World Bank, 2016a).

Regarding internal migration and remittances, the Ghana Statistical Service (GSS) estimates that about half of the Ghanaian population comprises internal migrants (GSS, 2014). According to Mazzucato et al. (2008), 35% of households receive internal remittance at least once within a year in Ghana. Considerable internal migration occurs within Ghana from North to South, rural to urban, rural to rural and urban to urban areas and these migrants send remittances to the household they left behind.

The huge inflows of remittances, especially to developing countries has attracted the attention of several researchers. Topics on remittances that have attracted the attention of researchers include the occurrence of remittance flows, the motivation underlying these transfers, factors that influence the transfer decision and the amounts of remittances. Also, several studies have assessed the effect of remittances on outcomes, such as poverty, wellbeing, inequality, education, and agricultural productivity (Adams & Page, 2005; Adams & Cuecuecha, 2013; Boakye-Yiadom, 2008; Lucas & Stark, 1985; Quartey, 2006b).

The usage of remittance income currently represents one of the key issues that researchers are concerned with in relation to economic development. This is primarily because, in addition to the huge volumes that are associated with such transfers, especially to developing countries, some recent studies show that remittance receiving households exhibit varying tendencies towards how remittance income are spent. From economic development perspective, researchers are concerned with how remittances are spent. That is, whether remittance inflows are spent more on consumption goods or are channeled into human capital and physical investments by recipient households. There have been attempts by researchers to investigate how households spend such inflows (Sasin & McKenzie, 2007). There have also been renewed interest lately to examine whether there is the tendency for remittance flows to influence household spending on productive investment activities.

Literature is inconclusive on whether remittances are expended on productive activities or otherwise. It provides three views on how remittances are used and the impact on economic development. The first view regards remittance as fungible. That is, remittances are considered

just like any other source of income and therefore does not result in any changes in spending behavior (see for example; Castaldo & Reilly, 2007; Thapa, 2009). The second view considers remittances as compensatory income, as such, households spend more on consumption goods. Chami et al., (2003) for example found in their work that a significant portion of remittances are spent on consumption and a small portion of remittance goes into unproductive investment activities. In the literature, this view is regarded as pessimistic because, the expenditure behavior of remittance receiving household has little or no impact on the local economy.

However, recent studies support a more optimistic view at the micro level. Those that hold this view regards remittances as transitory income and therefore are spent more on investment-type goods with long term benefits like physical and human capital development. This is evidenced by the fact that remittances allow the poor remittance receiving households to spend more on human capital development and other private investment (Adams & Cuecuecha, 2010; Osili, 2004; Yang, 2008). Expenditure on such productive investment-type commodities has the tendency to result to a positive effect in the long-term.

The objective of this study is to provide insight on how remittances are spent by remittance-receiving households in Ghana. The study looks at the recipient household according to the origin or source of the remittances so as to ascertain whether the source of remittance affects how they are spent. Since remittances are received under information asymmetry, economic uncertainty and at different frequencies (Chami et al., 2005; Seshan, 2012), how they are perceived by the households is sometimes complicated. For instance, transfers that are perceived to be significant,

stable and increase in times of disasters are spent differently from those that are perceived otherwise.

Studies show that internal and external remittances affect household consumption behavior differently. Some researchers found that internal remittances are spent on daily consumption expenditures while external remittances tend to increase household expenditure on investment goods (Adams & Cuecuecha, 2010, 2013; Adams et al., 2008; Castaldo & Reilly, 2007; Clément, 2011). Since needs and expenditure priorities vary among households, remittance flows and its regularity may influence the choices made by recipient households differently. Therefore, the study assesses the impacts of remittances on household expenditure decisions by first looking at total (overall) remittances and then by source (i.e. internal, external, and both internal and external remittances only).

In assessing the impact of remittance on household expenditure behaviour, the selection of the functional form matter so as to adequately capture the effect of remittance. Most of the studies tend to adopt the Engel curve frame work and make use of the Working-Lesser Specification (Adams & Cuecuecha, 2013; Castaldo & Reilly, 2007; Göbel, 2013; Tabuga, 2007; Taylor & Mora, 2006). However, the main challenge with the Working-Lesser framework is the general difficulty in identifying and using a perfectly suitable instrument to solve the potential selection bias and simultaneity issues associated with migration and remittances. As such, following studies by Clément, 2011; Esquivel & Huerta-Pineda, 2007; Randazzo & Piracha, 2019 and Thapa & Acharya, 2017, this study uses the Propensity Score Matching (PSM) approach.

1.1 Problem statement

There are extensive studies that have examined the usage of remittances and outcome variables such as poverty, welfare, education, health, entrepreneurship and economic development (Adams et al., 2008; Amuedo-Dorantes et al., 2010; Boakye-Yiadom, 2008; Gyimah-Brempong & Asiedu, 2015; Lu & Treiman, 2011). The results from these empirical studies are quite mixed. Most of these empirical works have focused on the short-term use of remittances for immediate consumption items such as food and other consumer goods. Quartey & Blankson, (2003) find that in the short term, there are beneficial effect of remittances at both the micro and macro level. Ratha, (2007) on the other hand, argue that remittances lead to an increase investment in education, health and entrepreneurship whose benefits are mostly in the long term.

From the perspective of economic development, the key concern is as to how these large and increasing remittance inflows are spent by households. That is, as to whether these monies are spent on consumer goods or are channeled to human and physical investments. There is evidence that remittances have positive effect on households' welfare in the short term (Peter Quartey, 2006b). However, the effect of remittance on economic growth and development has been a subject of debate. Some studies find a negative relationship between remittance and growth (Chami et al., 2005; Clément, 2011) while other studies report otherwise (see for example; Castaldo & Reilly, 2007; Thapa & Acharya, 2017). Part of the reasons ascribed to this controversy may be that, the effect of remittances on human capital development, a key component of economic growth; is experienced in the long term (Adams, 2011). Therefore, expenditure on investment-type goods such as education, health and housing can have a positive effect on economic development in the long term.

The discussion on the role of remittances on households' expenditure is premised on three arguments. First, though remittances might not be directly spent in productive ventures, they can be spent on some investment-type goods (example; health, education, housing or business enterprise). Secondly, remittances, just like any other source of income, are fungible, thus even if they are not spent directly on productive activities, they may free other resources to be expended on such productive investments. Finally, the increased in expenditure on consumer goods may facilitate local development in some context because the increased demand for these goods may create opportunities for the establishment of other businesses, only if it does not lead to increase in imports. Some recent studies have shown that remittance-receiving households are revealing varying propensity in their expenditure behavior on consumption and investment goods compared to those that do not (Adams & Cuecuecha, 2013; Clément, 2011; Thapa & Acharya, 2017).

In Ghana, few studies have focused on the both short-term and long-term impact of how remittances are spent over different expenditure categories at the same time. While Adams et al. (2008), using 2005/2006 round of Ghana Living Standard Survey (GLSS) found that internal and external remittances have no significant impact on expenditures on consumption and investment goods, Adams & Cuecuecha (2013), also reports that internal and external remittance receiving household spend more on investment goods and less on consumption. The variations in conclusions appear to support the view that literature is inconclusive on how remittance inflows affect household expenditure on consumption and investment goods.

However, with steady increases in the flow of remittance in Ghana since 1999, this study seeks to establish what households are spending on. That is, whether remittance receiving households are spending on consumer goods or human and physical capital goods. Also, the study seeks to

ascertain whether there are differences in how households spend remittance received from the various sources (internal, external and both internal and external). This is relevant because, how these inflows are spent affect economic development.

Literature supports the assertion that the methodology employed as well as the stage of development of the country under study in remittance related works may affects the conclusions (Adams & Cuecuecha, 2010, 2016; Clément, 2011; Thapa & Acharya, 2017). With Ghana attaining the lower middle-income status in 2011(World Bank, 2011), this study contributes to the empirical works at this stage of the country's development by providing more insight on how the inflow of remittances by source affect households' expenditure decisions in Ghana.

1.2 Objectives of the study

The main objective of the study is to examine the effect of remittances on household expenditure decisions. The current study considers six major expenditure categories guided by United Nation's classification of individual consumption according to purpose (COICOP), thus, food and no-food classifications. The expenditure categories considered in the study are food, consumer durable goods, education, health housing and "other" non-food items. Expenditure on food and consumer durable goods are regarded as consumption whiles expenditure on education, health and housing are considered as investment-type goods. In doing so, this study intends to specifically address the following objectives:

1. To examine the effect of internal remittance receipts on household expenditure on food, consumer durables, education, health, housing and other non-food items
2. To examine the effect of external remittance receipts on household expenditure on food, consumer durables, education, health, housing and other non-food items
3. To examine the effect of the receipt of internal and external remittance only on household expenditure on food, consumer durables, education, health, housing and other non-food items

1.3 Research Questions

In assessing how the receipt of remittance affects households' expenditure decisions, the following questions are asked:

1. What is the effect of the receipt of internal remittance on household expenditure on food, consumer durable goods, education, health, housing and other non-food items in Ghana?
2. What is the effect of the receipt of external remittance on household expenditure on food, consumer durable goods, education, health, housing and other non-food items in Ghana?
3. What is the effect of the receipt of both internal and external remittance only on household expenditure on food, consumer durable goods, education, health, housing and other non-food items in Ghana?

1.4 Relevance of the Study

In Ghana, most studies on remittances and household expenditure has focused on the receipt of remittance from any source, from internal source only and from external source only. This study extends the analysis of remittance inflows to include the receipt of both internal and external remittances only and how it influences households' spending.

Remittance may be used differently by Ghanaian households; therefore, the results will add to the body of comparative knowledge available on the impact of remittances on countries at various levels of development. Furthermore, the relevance of this study is to augment existing literature by situating the effects of remittances on households' expenditure decisions of Ghanaians within an African context. Most of the literature on this subject is dominated by studies in South/Latin America.

Ghana embodies a good case study for investigating these matters. This is because the country has a large number of internal and external migrants and as the remittance inflow trend shows, the country receives huge remittance flows. Also, according to the World Bank (2011), Ghana moved from low-income to lower middle-income status in 2011, as such the result will contribute to the literature of countries at this stage of development. Therefore, investigating how these remittances are spent is critical to ascertain the impact on household's welfare at the micro level as well as the on the country.

If remittances are reported to support recipient households to obtain higher levels of human or physical capital or set up some form of business enterprise, then it may also result in a decline in

poverty of recipient households in the long-run (Gyimah-Brempong & Asiedu, 2009). Also, to the extent that remittances have the propensity to improve household living standards in the short-run, through increased or improved consumption, it may have a positive impact on households' welfare (Ackah & Medvedev, 2010; Boakye-Yiadom, 2008; Peter Quartey, 2006).

This will therefore be useful for stakeholders like government to leverage on the findings and develop policy framework to make best use of the economic tradeoff that accrue from migration and remittance flows. The findings will also provide relevant information for the government and civil society organizations to pursue policies that will improve the conditions under which migrants live, work, earn income and remit.

1.5 Organization of the study

The study is organized into five chapters. Chapter one provides the introduction and background to the study. Chapter two follows with a general overview of remittance flows in Ghana. It provides an overview of migration and remittance as well as expenditure behavior among Ghanaian households. Chapter three reviews the relevant literature; both theoretical and empirical on remittances and households' expenditure. Among other things, this chapter looks at the theories of migration and remittance, and the motivation and uses of remittance. Chapter four discusses the methodology for the study and also provides a discussion of the empirical results. It also covers estimation procedure and the empirical modelling. Finally, chapter five presents the conclusion, summarize the key results of the study and analysis of findings to derive some useful recommendations. It also includes the limitations of the study and suggestions for future study.

CHAPTER TWO

OVERVIEW OF REMITTANCE AND HOUSEHOLD EXPENDITURE BEHAVIOUR

2.0 Introduction

This chapter presents a general overview of remittances flow and household expenditure patterns in Ghana. The chapter discusses both the historical and descriptive outline of migration and remittance flows as well as household's expenditure behaviour in Ghana. Datasets from the last three rounds of the Ghana Living Standard Survey are used to discuss the trends in migration and remittance inflow to households.

2.1 Migration and Remittance in Ghana – A Historical Account

From the period before colonial times up to the late 1960's, Ghana enjoyed some positive economic fortunes and external migration involved few people, majority of whom were students and specialists. Majority of these people migrated to Britain and some other English-speaking countries due to colonial (historical) relations (Anarfi et al., 2000). Also, some Ghanaian professionals served in countries such as Sierra Leone, Zambia, Gambia and Botswana. Ghanaians started migrating after 1965 and this was fueled by the prevalent economic crisis from that period. Ghana experienced economic crisis as evidenced by deficit in the balance of payments, high unemployment and social dissatisfaction (Anarfi et al., 2000). This resulted in a remarkable mass migration to Europe and United States of America as well as the Middle East and Asia. The decline of the economy made Ghana unappealing to both citizens and foreigners. The enforcement of the

Aliens Compliance Order; whereby non-Ghanaians without valid documents were expelled from the country worsened the situation. Several people emigrated within that period to various destinations in the sub-region.

From the early 1980's there was large scale emigration of Ghanaian labour force (both semi-skilled and unskilled) out of the country in search of jobs in neighbouring countries (Anarfi, 1982). The demand for skilled labour abroad also caused a number of professionals to migrate especially during the period of economic decline to the extent that there was scarcity of basic necessities of life. Thus, migration became one of livelihood strategies that households adopted to deal with the difficult economic conditions.

Ghanaians continued the migration to neighbouring countries through the 1990's to recent times. However, in recent times, the migration of Ghanaians is characterised by the creation of diaspora, and this begun from the middle of the 1980's. Van Hear (1998) considers Ghana as one of the countries involved in creating a 'diaspora networks' in recent times. Since the 1990s, several Ghanaians have moved to cities in Europe and North American (Black et al., 2003).

By the beginning of the millennium, several Ghanaians emigrated in search of job opportunities. Most of these migrants were teachers, lawyers, and administrators. Some of them were requested by neighbouring African states to assist with their nationwide development agenda after attaining

independence (Anarfi et al., 2000). There were other migrants that went back to work in the foreign nations where they were when Ghana was in economic crisis. More so, there were some who migrated for education and/or training initially but remained behind after completion. Finally, there were rising numbers of Ghanaians who were born outside the country and they either stayed behind when their parents returned back home or travelled abroad again when they were old enough or could afford to do so on their own.

Domestic or internal migration was prevalent in the period before the 1960s (Awumbila & Ardayfio-Schandorf, 2008). The rich were the main participants of migration during this period, as they travelled to the urban areas for better educational opportunities. As they migrate, they remit back to the family left behind. In Ghana, there are different forms of internal migration; north to south, rural to rural and rural to urban areas (Twum-Baah & Nabila, 1995; Mensah-Bonsu, 2003). As migration increases, remittances arise as a source of livelihood for the left behind household members (Ganyo, 2013).

2.2 Pattern of Remittance Flows in Ghana

There is a long history of movement of people within the country, within Africa and across the world. There is evidence to show that Ghanaians who migrate to destinations outside Africa are mostly from Southern Ghana, including the Ashanti, Eastern and Central regions (Asiedu, 2005). Europe, North America, the Middle East and Asia are destinations for most of these migrants.

Migration is associated with remittance inflows. Remittance inflows is also characterized by various dynamics including the proportion of remittance receipt by gender and location, regularity of remittance inflows and the distribution of remittance receipts by source. The pattern of remittance inflows is concerned with the trend of the various dynamics over time.

Table 2.2.1 shows the proportion of households' remittance inflows by households by location, gender of remitter and relationship to head of recipient household in 2007, 2013 and 2017. The outcome of table 2.2.1 indicates that in all the residential location of the households, a higher share of remittances received by households were from children of household head especially female children (39%) as compared to male children (33%) in 2007. Similarly, in 2013, a higher proportion of remittances received by households were from children both in urban and rural vicinities especially female children (45%) compared to male children (23%) and in 2017, the proportion of female children was 40% while that of male children was 26%.

In all the years under consideration, the proportion of children in the rural areas who send remittance is higher than those in urban areas. In the rural and urban dynamics, the proportion of female children who remit is higher than male counterparts in 2007 and 2017. That is 44% and 38% for female and male children respectively in 2007 and 47% and 28% for female and male children respectively in 2017. This is probably because children, especially the elderly ones, feel responsible for the upkeep of their parents and younger siblings. Conversely, the opposite is the case in 2013, where the proportion of male children is 54% against 30% for female children.

Finally, spouses of the household head constitute the least remitters for all the years under consideration.

Table 2.2.1: Proportion of Remittance Received by Households

Relationship of Remitter to Household head	Urban		Rural		All	
	Male	Female	Male	Female	Male	Female
<u>2007</u>						
Parent	7	15	3	7	4	10
Spouse	12	2	7	1	9	1
Child	26	33	38	44	33	39
Brother/Sister	23	23	21	19	22	21
Other relative	17	18	20	22	19	20
Non relative	15	9	11	7	13	9
All	100.0	100.0	100.0	100.0	100.0	100.0
<u>2013</u>						
Parent	22	38	10	28	16	34
Spouse	1	13	1	14	1	14
Child	36	20	54	30	45	23
Brother/Sister	19	8	18	9	19	9
Other relative	17	16	13	14	15	15
Non relative	5	5	4	5	4	5
All	100	100	100	100	100	100
<u>2017</u>						
Parent	7	12	7	15	7	13
Spouse	21	3	16	1	20	2
Child	26	37	28	47	26	40
Brother/Sister	13	20	16	20	14	20
Other relative	13	13	14	13	14	13
Non relative	20	15	19	4	19	12
All	100	100	100	100	100	100

Source: Authors computation from GLSS 5, GLSS 6 and GLSS 7

Therefore, there seem to be some consistent pattern on the receipt of remittance from household members from 2007 to 2017. Children of household heads constitute the highest proportion on remitters while parents or spouses form the least.

Table 2.2.2 further shows that less than a fifth of remittances are received monthly. It is significant to note that those that could not recall the frequency of remittance inflow were highest in 2007, 2013 and 2017 representing 51.3%, 43.7 and 38.3% respectively, probably because they rarely received inflows. Weekly inflows constitute the lowest regularity of remittance inflow. It is reasonable to argue that majority of migrant's resort to remitting monthly, quarterly or annually because of the associated high transaction cost of these transfers.

Table 2.2.2: Regularity of Remittance inflows

Frequency of receipt of remittances	2007 (% of total)	2013 (% of total)	2017 (% of total)	All
Weekly	5.64	4.86	5.6	5.37
Monthly	16.82	16.66	18.96	17.48
Quarterly	11.05	10.95	17.01	13.00
Annually	12.6	11.04	11.31	11.65
Do not recall	51.28	43.69	38.3	44.42
Other	2.61	12.79	8.82	8.07

Source: Authors computation from GLSS 5, GLSS 6 and GLSS 7

On the regional dynamics, Table 2.2.3 provides the proportion of regional receipt of remittance in Ghana. The differences in the regional and locational receipt of remittances has the potential to

influence its impact on household spending decisions. The results show that, more households in the Ashanti region received remittances in both 2007 and 2013 (18.5% and 12.18% respectively); making the region the highest destination of remittances for the period under consideration. This is closely followed by the Greater Accra and Eastern regions to form the top three destination regions of remittance destinations in Ghana. Also, Brong Ahafo, Northern, Upper East and West are the least four remittance destinations. However, GLSS 7 which captures only internal remittance in 2017 shows that, Volta region is the highest destination with 15.4%. This is closely followed by Eastern, Central and Upper East regions.

Table 2.2.3: Proportion of Regional Receipt of Remittances

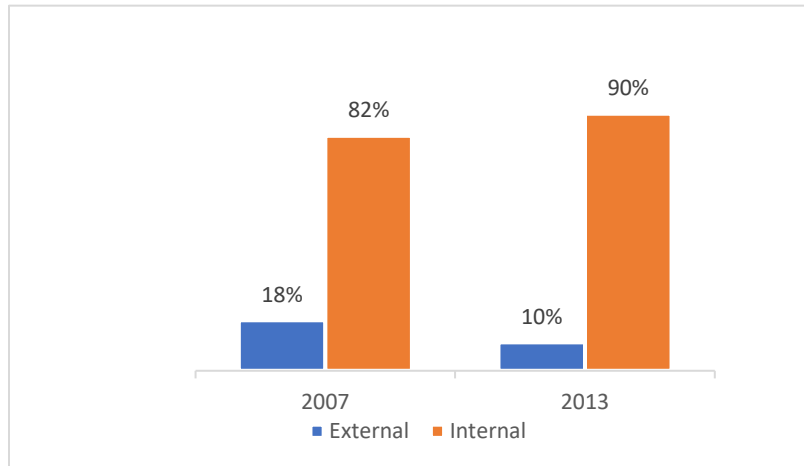
Region	2007 (% of total)	2013 (% of total)	2017 (% of total)	All
Western	8.97	10.15	6.79	8.64
Central	8.67	9.00	13.08	10.25
Greater Accra	13.24	10.41	7.35	10.33
Volta	9.80	10.50	15.40	11.90
Eastern	10.74	11.54	13.83	12.04
Ashanti	18.50	12.18	9.05	13.24
Brong Ahafo	8.80	9.75	8.35	8.97
Northern	8.69	10.33	9.05	9.36
Upper east	6.48	8.48	12.40	9.12
Upper west	6.10	7.66	4.70	6.15

Source: Authors computations from GLSS 5, GLSS 6 and GLSS 7

Furthermore, internal remittance constitutes the greatest proportion of remitters. In 2007, internal remittance sources constitute 82% and in 2013 it was 90% (Figure 2.2.1). Also, according to Ghana Statistical Service (2013), 42.3% of internal remittance recipients were in urban areas while

57.3% were in rural areas. Similarly, in 2007, 29.4% of recipients were from coastal zone, 42.1% from forest zones and the savannah zone constituted 28.5% (GSS, 2007).

Figure 2.2.1: Distribution of Remittance by Source



Source: GLSS 5 and GLSS 6

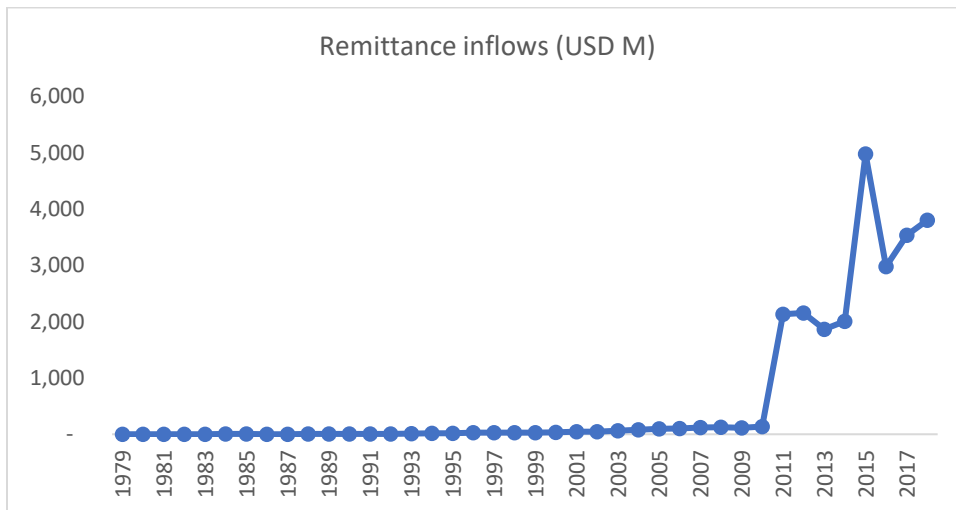
2.3 Channels of Remittances

The channels of remittances refer to the means through which remittances are sent and received. They are broadly categorized into two; formal and informal channels. The formal channels typically are traceable and accounted for in national accounts. The advancement in technology in recent years has facilitated remittance transfers through the formal channels. Companies offering remittance facilitation services such as Western Union, Money Gram, Ria, etc., facilitate the remittance transfers through the formal channels. Also, the emergence of transfers via mobile money has led to the growth of financial technology (fintech) and telecommunication firms in that space, making it easier to remit through the formal channels (Pelletier et al., 2020).

Nonetheless, there are considerable transfers that are done through the informal means. This includes remittances sent through a relative, friend or the remitter in person. According to Freund & Spatafora (2005), in developing countries, the informal channel accounts for 35% of remittances inflows. These inflows are usually not accounted for in the national accounts. The Ghana statistical service estimates that about 15% of remittances are sent through official channels; thus, through bank accounts and money transfer agencies. About 40% of remittances are received directly from the senders whilst about 45% of the transfers are received through someone (GSS 2007, 2013).

2.3 Profile of Remittance Flows in Ghana

Remittances play an important role in national development. Several studies such as Manuh (2005); Mazzucato et al., (2004) and Quartey (2006) have emphasized remittance inflows and its role in improving livelihoods in receiving households. In Ghana for example, the level of remittance flows from abroad has increased from USD 479 million in 1999 through USD 1.5 billion in 2005 to USD 4.9 billion in 2015 (World Bank, 2017a). Figure 2.4.1 depicts the trend of external remittance inflows in Ghana.

Figure 2.3.1 External Remittance Inflows in Ghana

Source: Authors computation from World Bank Migration and Remittance Data (2018).

2.4 Remittance and Household Expenditure Behaviour

In analysing how the receipt of remittance affects the expenditure behaviour of households, the estimation of the average budget shares is done for remittance receiving households and compares it with non-receiving households. Table 2.4.1 presents the average budget shares of households that receive no remittance, households that receive internal remittance and households that receive external remittance in 2007, 2013 and 2017.

From Table 2.4.1, households that receive internal remittance increases their expenditure on food for all the years under consideration as compared non-remittance receiving households. However, households that receive external remittances spend less on food in 2007 and 2013 when compared non-remittance receiving households. Similarly, households that receive internal remittance spend less on consumer durable goods in 2007 and 2013 but this increase in 2017. In contrast, the

households that receive external remittance spends more on consumer durable goods in both 2007 and 2013.

Table 2.4.1 Average Budget Shares

Expenditure Categories	No Remittance			Internal Remittance			External Remittance	
	2007	2013	2017	2007	2013	2017	2007	2017
Food	0.56	0.58	0.50	0.58	0.59	0.53	0.45	0.46
Consumer durables	0.18	0.12	0.13	0.17	0.01	0.14	0.22	0.12
Education	0.05	0.07	0.19	0.04	0.07	0.09	0.07	0.09
Health	0.02	0.01	0.00	0.01	0.12	0.01	0.02	0.01
Housing	0.03	0.07	0.05	0.03	0.07	0.09	0.03	0.09
Others	0.14	0.15	0.12	0.13	0.14	0.14	0.18	0.23
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: Authors computation from GLSS 5, GLSS 6 and GLSS 7

Expenditure on human capital variables are quite varying. Households that receive internal remittance spend less on education in 2007 and 2017, while those that receive external remittance spend more on education in 2007 and 2013. Regarding health expenditure, households receiving internal remittance spend less in 2007 and 2017 and more in 2013. Concerning spending on private investment such as housing, households that receive internal remittances spend more only in 2017 while the other years remain unchanged. External remittance receiving households also spend more on housing in 2013 and 2017.

In summary, households receiving internal remittances spend more on consumption goods (food and consumer durable goods) and less on human capital investment (education and health).

However, households that receive external remittance spend less on food and more on consumer durable goods and education.

2.5 Conclusion

The chapter discussed issues relating to migration and remittance flows with much emphasis on the history, patterns and profile of remittance as well as the overview of household expenditure patterns in Ghana. The history of migration and remittance reveals that, it is traceable to periods before colonialization. The pattern of migration also indicates that it can take the form of within the country, intra-regional and inter-continental. Most remittances are received from migrated children of the household head.

On household's expenditure patterns, the historical trend suggests the receipt of remittances is associated with some decline in food expenditure shares and consistent increases in education and housing expenditure shares. Also, expenditure shares on consumer durables and health are on a decline.

CHAPTER THREE

LITERATURE REVIEW

3.0 Introduction

This chapter discusses literature pertaining to remittances and households' spending behavior. It seeks to provide a discussion on the concept of remittance, the motivation to remit, theories regarding migration, remittance and development, as well as the uses of remittances. The chapter in essence presents the theoretical literature and the empirical findings of similar studies which would facilitate the analysis of this study.

3.1 Theoretical Literature

3.1.1 Migration, Remittance and Development Theories

Early literature on migration assumes that individuals or households rationally consider various locations and decide on the place that maximize their anticipated gains. However, various schools of thought have emerged over the years to explain the forces driving migration and its impact on development. The theories on migration, remittance and development nexus have their roots from the optimistic and pessimistic views. Following studies by Adenutsi, 2010; De Haas, 2007; Rahman & Fee, 2014; Redehegn et al., 2019 and Taylor et al., 1996, there are three main theories that look at this nexus. The development optimistic view was central during the 1950's and 1960's. The development pessimism gain prominence during the 1970s through to the 1980s. Finally, the

development pluralistic perspective reigned throughout the 1980s and 1990s. These are discussed in more details below.

3.1.2 The Development Optimistic View

This theory comprises both the developmentalist and the neo-classical views. Proponent of this view are of the opinion that, migration and remittance have positive impact to the receiving household or country. During the 1950s and 1960s, there was large scale labor movements from developing countries to developed nations. Some governments even encourage migration as a means to promote development (De Haas, 2007).

According to the developmentalist, migration leads to a “North-South” transfer of investment capital and exposure of recipient nations to “liberal, rational and democratic ideas, modern knowledge and education” (Adenutsi, 2010, Page 34). As such, returned migrants are regarded as agent of change because they return with innovation and investment capital. The remittance inflows, skills and knowledge facilitate economic development of recipient countries.

The neo-classicalist also argue that countries can achieve optimal allocation of factors of production through migration to benefit both countries involved (sending and receiving countries). They opine that, it is possible to have factor price equalization as wage differentials between sending and receiving countries near zero, discouraging further emigrations. As labour continue to move through migration, it causes labour shortages, leading to a greater marginal productivity

of labor. Domestic wages increase to equalize that of migrants and this discourages migration. This further leads to a reallocation of resources from rural agriculture to mostly urban areas for industrialization, spiraling into economic growth and development.

3.1.3 The Development Pessimistic View

Generally, those who hold this view regard migration and remittance to have a negative affect on development. According to proponents of this view, migration is regarded as leading to the loss of valuable labour and this weakens the economies of the migrants. The emigration of the educated and able-bodied youth, often referred to as brain drain, leads to loss of human capital resources needed for development. It also results in non-productive and remittance dependent countries. They argue that, the benefits from remittances are unable to offset the losses. Also, since most of the people migrating are not the poorest, migration increases inequality in the country of origin.

More so, proponents of this view make the case that remittance causes dependence on conspicuous consumption, imports and unproductive investments (Englama, 2009). As such, as more of the remittance is used for conspicuous consumption, it causes inflation and this puts pressure on the country's real exchange rate. Exports becomes less competitive and results in import dependency. Furthermore, the pessimistic view is grounded on the fact that remittance transfer happens under information asymmetry and economic uncertainty and this can cause behavioural changes at the household level. This creates a moral hazard problem between those who remit and receivers (Chami et al., 2003). The recipients substitute other sources of income with remittance income,

making them more dependent on remittances. Remittance income leads to a fall in labour supply. This is because, with remittance income, household members substitute work for some leisure and make up with the remittance receipt (Fullenkamp et al., 2008). Therefore, remittance weakens the economy.

3.1.4 The Developmental Pluralistic View

This is the view espoused by the New Economics of Labour Migration (NELM) and they argue that both the development optimistic and pessimistic views are not static (Adenutsi, 2010; De Haas, 2007). According to the theory, the outcome of remittances on remittance-receiving countries are not strictly positive or negative but quite complex. The development pluralistic view looks at linking the causes and effects of migration, in such a way that the effects on development are both positive and negative (de Haas, 2007). Proponents of the theory argue that because of the intricacy of remittances and development, there is a need to consider a more dynamic understanding of the connection between them.

This view invigorated the thought on migration by considering the household, and not the individual, as the main decision-making unit and also regarded migration as a household risk mitigation behaviour. As such, the motive at play is not that of the individual income maximization, but that of the household. Migration is considered as a household coping strategy to income risk since remittance inflow serve as income insurance for receiving households (Lucas & Stark, 1985; Peter Quartey, 2006a). NELM proponents are of the view that migration is a

survival strategy by households to deal with economic shocks and market constraints so as to improve welfare.

3.2 The Motivation to Remit

Understanding the incentives to remit is crucial in analyzing the way remittance-receiving household actually use their remittance income. If the remitter has some expectations in return like benefiting from the investments made from the remittance when he returns back home, then the motivation can be considered to be economic in nature. In such situations, there is the tendency for the remittance income to be spent more on productive activities like investing in housing, entrepreneurial activities and education. However, if the reason for remitting is borne out of a social obligation, then there is the tendency for the remittance income to be spent more on conspicuous consumption (Lucas & Stark, 1985).

To understand the spending behavior of remittance-receiving households, it is important to consider the motivations for sending such remittances. Lucas & Stark, (1985), provides three main motivations to remit: the altruism, self-interest and a combination of both.

3.2.1 Altruism

The theory of altruism is of the view that, remittance received are used to cater for household day-to-day expenses of those left behind. Remittances supplement the income of household members. In this theory, the inflow of remittance increases whenever the income of the remitter increases.

The remitter and the recipient in this model derive utility from sending and receiving remittance. In a pure altruistic model, the remitter obtains fulfilment in the satisfaction of the recipients of the remittance.

3.2.2 Self-Interest

The theory of Self-interest is premised on the utility derived by the remitter from sending remittance. According to Lucas & Stark (1985), the reasons for remitting are based on selfish motivations rather than altruism by the migrant towards the family. Remittances serves as an avenue for the remitter to increase their self-esteem, increasing their eligibility for inheritance or acquisition of certain resources of the household or in the recipient community. The remitter thus tends to obtain favor when it comes to the allocation of inheritance or other family assets. Remittance transfers are also regarded as payment for services rendered. For example, parents receive remittances and use it to look after the migrants' children in their absence.

More so, remittances are sent for investment purposes or acquire assets in trust of the remitter. The remitter may thus require the recipient to invest in a business, housing, agricultural assets and land on their behalf. In addition, remittances are sent to pay for expenses once incurred for the remitter. This may include loans taken to enable the remitter travel.

3.2.3 Tempered Altruism

According to Lucas & Stark (1985), this theory is based on some intertemporal and mutually beneficial arrangement between the remitter and the recipient. Investment and risk are the key issues that underline this theory. The aim for such arrangement is for households to diversify risk by sending some of its members to different regions or countries, insulating them from the same shocks at the same time. Educated migrants are usually associated with higher wages and from the altruistic model, a higher wage leads to higher remittances sent. As such, the household head is likely to spend more on the education of their children so as to reap higher remittance if the children migrate. Rempel & Lobdell (1978) found a positive connection between the amount remitted and the education of the migrant. Lucas & Stark (1985) interpreted this as the repayment of the amount invested by the household.

Remittance allows risk-averse households to vary their income sources. According to Amuedo-Dorantes & Pozo (2002), migrants may behave rationally (as risk averse economic agents) by obtaining insurance as protection in the face of uncertainty. As such, remittances are regarded as payment to protect risky outcomes in the destination country. Risk such as harvest failure, price instabilities, livestock diseases, insecurity of land occupancy may render the rural economy precarious. Thus, the choice to remit is affected by the analysis of risks and returns weighted against local sources of income. The prevalent interest rate that a remitter may receive on funds is a key determinant of the decision to remit (Englana, 2007).

Some empirical works report that remittances are inspired by a mixture of motives including investment, insurance and altruistic motives (Adams, 2011; De Brauw et al., 2013; Rapoport & Docquier, 2006). Brown & Poirine (2005) present the altruism theory, whereby children who have migrated out of the country send remittances to pay debts of their parents. Using a survey of migrants from Tonga and Samoa living in Australia, the authors report that there is an inverted-U relationship between age of migrant workers and the decision to remit to their parents. On the volume of money sent, the result suggests that there is a positive association between the migrant income and the amount remitted, however, the intention to return back home is negatively associated to the migrants' education level.

In another study on the motivation to remit, de la Brière et al. (2002) use the Dominican Republic household survey to test both the insurance and investment motives to remit. That is, whether migrants' remit on the basis of an insurance agreement with parents or on the basis of benefiting from potential household inheritance. The authors report that the motivation to remit differs by migrants' destination (internal and external), gender and household composition. The outcomes also suggest that female migrant workers to the United States of America (USA) are motivated largely by the insurance motive. More so, female migrant workers to the USA send more remittances when their parents are not well, while male migrants do not do so unless they are the only migrant from the household.

Furthermore, Gubert (2002) uses a survey of rural households in Mali to investigate the motivation to remit for both internal and external migrants. The results suggest that these rural households in

Mali tend to use remittances as protection against shocks. More so, Osili (2007) use data collected from both remittance-sending migrants from the USA and remittance-receiving households in Nigeria to analyse the motives for remitting and the effect of remittances on savings. The author reports that the dominant motive for remitting is altruism, because the amount sent home is negatively related to household wealth. Savings in the home country are dominated by investment motives because there is a positive relationship between savings and household wealth.

3.3 Remittance and Household Expenditure Behaviour

The connection between remittance and household spending can be explained by treating remittances as a form of income of the households receiving them. According to traditional consumption models (i.e. the lifecycle and permanent income hypothesis), the source of income is immaterial in consumption behavior, as households tend to smoothen consumption (Carroll, 1997; Jacoby & Skoufias, 1998; Shefrin & Thaler, 1988). Hence, we would expect remittance-receiving household to behave like any other households, *ceteris paribus*.

However, some recent studies have shown that remittance-receiving household are exhibiting varying propensity to consume and invest when compared to those that do not (Adams & Cuecuecha, 2013; Clément, 2011; Randazzo & Piracha, 2018; Thapa & Acharya, 2017). Studies also show that the sources and amount of remittance income both play key roles in determining how they are spent (Boakye-Yiadom, 2008; Lubambu, 2014.; Mazzucato et al., 2008). Moreover, since remittance income is fungible, households expending remittance on consumption could free

up other funds to investment in some productive activities and vice versa (Adams 1998; Tabuga, 2007).

Investigating how remittances are spent has been the subject of numerous studies. This is because, the magnitude of such inflows has attracted the attention of stakeholders including governments, policy makers, international organizations and the academia. Some aspects of literature have been concerned with measuring the effects of remittance on collective economic measures such as poverty, welfare, economic growth and development(see for example: Adams, 2011; Adams, 2006; Boakye-Yiadom, 2008; Englama, 2007; Quartey, 2006b). Also, the literature suggests that such income transfers directly benefit households, and their spending decisions could have short-term or long-term impact on welfare (Adams & Cueduecha, 2010, 2013; Peter Quartey, 2006b).

3.4 Review of Existing Studies on Remittance and Household Expenditure

The household is the decision-making unit on the usage of remittances. As such, the household determines the contribution of remittances to development process of the receiving country. The way households perceive remittances they receive is not that straight forward. This is because, remittances are received under information asymmetry between the remitter and receiver, economic uncertainty and at different regularity (Chami et al., 2005; Seshan, 2012). Therefore, it is how the household perceives these remittance inflows that determines whether they are spent on consumption or investment activities (Randazzo & Piracha, 2014). For instance, transfers that are

perceived to be significant, stable and increase during crisis are spent differently from those that are perceived otherwise.

According to Adams & Cuecuecha (2010), the influence of remittances on household expenditure behavior can be categorized into three opinions. The first view is that remittances are fungible, thus are spent just as income from any other source. That is, a cedi of remittance inflow is treated by the household as a cedi of wage income, as such, does not result in any changes as to how households allocate their expenditure. In a more pessimistic view; some researchers found that, remittance receiving households spend more on conspicuous consumption (Adams, 2011; Chami et al., 2005; Clément, 2011). This spending behavior is regarded unproductive and has no effect on the local economy. Chami et al. (2005) provided evidence to support this view. However, a more recent view, derived out of the permanent income hypothesis regards remittances as transitory income and that households spend more on productive activities such as physical and human capital (Adams & Cuecuecha, 2010, 2013; Thapa & Acharya, 2017). This optimistic view of remittances can have positive effect on economic development through a positive effect on investment goods such as housing, agriculture, education and health.

The relevant existing literature is discussed by looking at how remittances are used for non-productive and productive expenditures. Non-productive expenditure, also referred to as consumption, is mainly composed of expenditure on food and consumer durable goods. Productive expenditure comprises expenditure on human capital development, physical capital and private investment.

3.4.1 Remittance and Consumption

Most households spend remittance inflows on basic consumption goods such as food and consumer durable goods including clothing and household durable items (Adams et al., 2008). Chami et al. (2003) reports three stylized facts according to the literature to support the use of remittances for consumption goods. The first is that, most remittances are spent on consumption. Secondly, a smaller portion of remittances generally go into savings and investment goods. Finally, the savings and investment done by households using remittances inflows are not considered productive to positively impact the general economy.

Adams & Cuecuecha (2010b) in their study on Indonesia, find that remittances increase the expenditure on food (a major consumption good) while housing (an investment good) expenditure declines. The results in this study is in contrast with a similar study on Guatemala by the same authors (Adams & Cuecuecha, 2010a); remittance-receiving households spend less on food and more on education and housing . They explained that the difference in outcomes can be attributed to the difference in the amount of transfers that are received by the two countries. Guatemala receives more remittances than Indonesia and Indonesians are relatively poorer. As such, the Indonesian households use the remittances to improve the consumption of basic goods while households in Guatemala are able to dedicate some portion of their expenditure to investment goods. However, in 2016 , using a more recent dataset on Indonesia, Cuecuecha & Adams (2016) reports that remittance receiving household spend more on food and more on education. This result shows some variation from the study in 2010.

A study by Clément (2011) on Tajikistan also supports the view that remittances are not used productively. Using propensity score matching analysis, he finds that internal and external remittances does not have a positive effect on investment expenditures. External remittances for instance increase household expenditure on consumption goods and reduces expenditure on investment goods. Internal remittance had mixed results; it had no effect on education expenditure, led to an increase in health expenditure and a reduction in housing and agriculture expenditure. He justified the result of this study on the basis that health outcomes are experienced in short term while education, housing and agriculture are perceived to be long term investment.

In a study on Kenya, Simiyu (2013), using a panel data of 295 households in Kenya and employing the fixed effects model to the data reports that, remittance are only used for instant consumption needs such as food, utilities and transportation cost. Similarly, Randazzo & Piracha, (2014, 2018), using OLS and propensity score matching in the study on Senegal, reports that on the average, internal remittance receiving households spend more on consumer durables, a consumption good.

3.4.2 Remittance and Human Capital Development

Exploring the effects of remittance on human capital is vital since it reflects the long-term benefit to households. This optimistic view of remittances could result in economic development through a positive effect on human capital variables such as education and health. The effects of remittances on health and education outcomes in developing countries is quite mixed.

Literature seems to be more unanimous on the impact of remittances on health outcomes than that of education outcomes. A number of studies have reported that remittances have a positive influence on household's health expenditures (see for example: Amuedo-Dorantes & Pozo, 2011a; Dorantes et al., 2007; Hildebrandt & McKenzie, 2005). For instance in Mexico, studies show that external remittances positively affect household health expenditure (Amuedo-Dorantes & Pozo, 2011b; Dorantes et al., 2007; Hildebrandt & McKenzie, 2005). Similarly, Cardona-Sosa et al. (2006) also found a positive impact of external remittances on household's health expenditures in Colombia.

In another study, Taylor & Mora (2006) examine household spending behavior among three different categories of households in Mexico. Thus, households without migrants, households with internal migrants and households with external migrants. The study reveals that the portion of a household's budget that is devoted to investment goods is higher in households with migrants than in households without migrants, while the share of consumption expenditure in migrant's households is lower when compared to households without migrants. Similar conclusions are drawn in the study by Adams & Cuecuecha (2010a). Using data on Guatemala, Adams & Cuecuecha (2010a) show that household receiving internal and external remittances spend more on human capital and other private investment goods.

Tabuga (2007), use the household survey of the Philippines to analyse the impact of remittance on households' expenditure and found mixed results. The study reveal that a significant portion of external remittances are expended on consumption goods and remittances also led to an increase

in the expenditure on education and housing. He also finds that, remittance receiving households spend less on tobacco and alcoholic drinks. Similarly, Castaldo and Reilly (2007) postulate that Albanian households on average, dedicate a greater share of their expenditure to investment activities. Their study reveals that households receiving external remittance are likely to spend more on consumer durable goods and less on food.

In a comparative study of seven countries in Latin America, Acosta et al. (2008) provide evidence of productive use of remittances. The countries involved in the study were Mexico, Peru, Nicaragua, Jamaica, El Salvador, Guatemala, and The Dominican Republic. The authors found that, remittance receiving households spent less on food in all countries except Jamaica. Also, households that receive remittance increase spending on health for all the countries, except Nicaragua. The results were more indeterminate for education expenditures. In El Salvador, Guatemala and Peru, there was a positive effect of international remittances on education expenditure but not for the other countries.

In a recent study on Nepal, Thapa & Acharya (2017) use data from the 2010/2011 Nepal Living Standards Survey and apply the propensity score matching method to argue that remittance receiving households spend more on consumption and human capital investment as compared to non-receiving households. Although the finding seem mix, expenditure on non-food commodities including consumer durables, health and education increases among remittance receiving household than non-receiving households.

Olowa & Awoyemi (2011), using the 2004 living standard survey, examine the connection between remittances and household expenditure in rural Nigeria. They report that households receiving internal and external remittances spend less on the expenditure on food and consumer durables when compared to households receiving no remittances. Also, the result shows that a greater portion of remittance inflow goes into education. The increased in the marginal spending on education gives some indication that spent on productive activities.

In Ghana, Adams & Cuecuecha (2013), using the 2005/2006 round of GLSS and employing the multinomial treatment method, reports that remittance-receiving households spend more on investment and less on consumption goods. The authors reveal that households receiving internal or external remittance spend less on food (a key component of consumption) and more on education, health and housing. This however contradicts an earlier work by Adams et al., (2008), a world bank policy research paper on Ghana, who employed OLS (multinomial logit). The authors report that households receiving internal and external remittances do not devote more on food, education and housing than households that do not receive remittances. According to Adams et al. (2008), the reasons ascribed to the findings in the former study includes the fact that the sample size used is not large enough to generate sufficient variations in the variables, implying that the instruments may not have sufficient independent variations to identify effects of remittances on consumption or investment. Secondly, that while the study was based on Ghana, a low-income country, while similar studies have been based on middle-income countries with higher incomes especially considering works from Latin America. The variations in findings in these studies raises issues on the choice of functional form in remittances related studies (see for example: Clément, 2011; Randazzo & Piracha, 2018; Thapa & Acharya, 2017).

Using cross-section and pseudo-panel data, Gyimah-Brempong & Asiedu (2015) investigate the effects of remittances on investment in education. The results show that remittances increase the likelihood that households enroll children in basic schools. This suggests that remittances have the tendency to increase human capital formation. Similarly, Boakye-Yiadom & Lambon-Quayefio (2018) studied the impact of receipt of remittance on households' spending on basic education. The results suggest that the receipts of external remittances have a significant positive effect on households' expenditure on basic education.

Furthermore, Randazzo & Piracha (2018), using OLS and propensity score matching in the study on Senegal report that on the average, internal remittance-receiving households expend more on consumer durables, education and private investment but expend less on food. This seems to give a signal of some productive use of remittances

3.4.3 Remittance, Physical and Private Investment

The effect of remittances on business activities has been quite controversial. In one of such studies, Dorantes et al. (2006) use survey data to analyse the effect of remittances on business creation for The Dominican Republic household. The authors employed simultaneous probit models and report that households receiving external remittances are more unlikely to own a business than households that do not. They explained that a possible explanation for this outcome may be that

the receipt of remittances increases the minimum acceptable wage of household heads, thereby making them unlikely to invest in business.

Some empirical works in developing countries demonstrate that a huge share of external remittances is expended on housing and land (Adams & Cuecuecha, 2013; Osili, 2004; Randazzo & Piracha, 2018). For example Osili, (2004) studies how external migrants invest remittances in housing in Nigeria. He analysed the likelihood of migrant workers investing in housing, found that older migrants as well as those with high incomes are more likely to invest in housing.

In a similar study, Woodruff & Zenteno (2007) use instrumental variables to investigate remittances and business creation in Mexico. Using data from a survey of owners of businesses in urban areas of Mexico, they report that external remittances provide migrant households with the needed capital for their business enterprises activities.

3.5 Conclusions

This chapter reviewed some relevant literature on remittance and household expenditure behaviour. The theoretical literature reveals three theories that characterizes the relationship among migration, remittance and development. The theories include the development pessimist by the classicalist, development optimist by the neo-classicalist and developmentalist and finally, the development pluralist by the New Economics of Labour Migration (NELM) theorists. The theories present optimistic view, pessimistic view and a combination of both views in

conceptualizing and analyzing the effect of migration and remittances on welfare and development.

The connection between remittance and development has been a subject of debate in the literature. One view regards remittance as fungible, as such its contribution to development is not different from other sources of income. The second school of thought argues that remittance can bring about behavioral changes which may lower their influence on development compared to income from other sources. The third perspective posits that remittance promotes development by increasing investment in human and physical capital (Adams et al., 2008; Chami et al., 2003)

Empirical literature supports these various positions. One of the issues accounting for the varying results is the stage of development of the country. Literature seems to support the view that the poorer the country, the more remittances are spent on consumption as shown by studies in Indonesia and Guatemala (Adams & Cuecuecha, 2010a, 2010b). Several studies from South America report that households that receive remittance spend less on the average on food (i.e., consumption good) and more on investment goods (i.e., education, health, housing) as households that do not receive remittance. Studies from countries including Mexico (Taylor & Mora, 2006), Peru, Nicaragua and The Dominican Republic (Acosta et al., 2008; Adams & Cuecuecha, 2010a) provide evidence. However, several studies also provided mixed results; remittances lead to both an increase in consumption and investment activities. This is evidenced by studies in the Philippines (Tabuga, 2007), Nepal (Thapa & Acharya, 2017) and Senegal (Randazzo & Piracha, 2018).

The outcome of studies on Ghana seems to follow similar work from South America. That is, households receiving either internal or external remittance spend less on food, a key component of consumption and more on education, health and housing (Adams & Cuecuecha, 2013). Since Ghana transitioned to lower middle-income position in 2011 (World Bank, 2011), this study, will make use of a more recent data to account for the country's improved status. Thus, since few studies have been carried out to examine the effect of remittances on household spending decisions, this study will contribute to the empirical works in this area and provide more insights on how the inflow of remittances impacts on households' expenditure decisions in Ghana, as a lower middle-income country.

CHAPTER FOUR

METHODOLOGY AND DISCUSSION OF RESULTS

4.0 Introduction

This chapter is divided into two segments. The first section looks at the study's empirical analysis which is based on the treatment effect approach. Here, the propensity score matching of the treatment effect model is chosen because it facilitates the ability to match two groups that cannot be observed at the same time as well as reducing the inherent bias associated with the selection process. The second part provides a discussion and insight on results of the empirical estimations.

4.1 Analytical Framework

The study adopts an analytical framework premised on remittance literature. In the literature, there are some general methodological issues encountered when carrying out empirical microeconomic studies using secondary data of which remittance related studies are no exception. Adams (2011) broadly categorized these methodological issues into at least four main categories; reverse causality, simultaneity, omitted variable bias and selection bias. These methodological issues arise due to the inherent bias created in the flow of remittance when comparing remittance-receiving households to non-receiving households with different observable and non-observable characteristics (Maimbo & Ratha, 2005). This implies that, households that receive remittance may not be randomly selected. As such, simply comparing households that receive remittances with those that do not may provide biased estimates.

In most times, decisions on migration, remittances, and household expenditure are made at the same time. For instance, a household may decide to send a male child abroad and at the same time send a younger female child to school. Therefore, it is possible that variables that explain migration or remittances also explain outcome variables such as household consumption patterns, education and health. Also, some characteristics which affect migration and remittances are not observable. For instance, households with ambitious members may have a higher predisposition to migrate and this influences remittance. However, it is very challenging to measure ambition, and this makes it problematic to establish causation in migration and remittance studies.

Reverse causality occurs when outcome variable also influences the explanatory variable. While remittances may generally improve the health of household members, the health status can also influence the volume of remittances received. As such, reverse causality needs to be considered in the analysis or else erroneous conclusions will be arrived at. Thirdly, selection bias, which represents how people who have the tendency to migrate and to send remittances are selected, creates difficulties in migration and remittance studies. According to Heckman (1979), sample selection bias characterizes remittance receipts. This bias associated with remittances may arise either by self-selection by individuals or through the data units under investigation. Thus, remittances received by households, may not be a reliable estimate of what the situation of non-receiving households would have been had they received remittances. As such, a comparison of households that receive remittances with those that do not may result in a biased estimate of the effect of a random treatment of remittances. Finally, omitted variable bias arises when households receive remittances based on characteristics that cannot be observed like the degree of risk aversion

of the household head. Since it is difficult to measure such unobservable characteristics, this omitted or lacking variable(characteristic) may lead to a biased conclusion. This is a problem in most studies dealing with cross sectional data.

The literature provides various solutions to these methodological problems bedeviling migration and remittances studies. This includes conducting a randomized experiment, where one group receives remittance (treatment group) and the other does not (control group) and the characteristics of these two groups are compared to ascertain causal relationship. However, randomized experiments are rare especially in developing countries because they are very expensive to conduct. More so, panel data can be used to overcome the methodological issues. The inherent biases that arise from endogeneity, selection and omitted variables are reduced by taking the first difference between various variables. Furthermore, a counterfactual scenario can be constructed to determine what the status of the household would have been if they had not received remittances. The propensity score matching technique is often used in constructing counterfactual scenarios. Instrumental variables are also used as a solution to the methodological issues. A good and valid instrument can remove many of the biases that may arise from these methodological issues. However, it is very challenging identifying a good and valid instrument in practice.

However, because of time and resource constraint, an experimental set up for the receipt of remittance is not feasible. Also, the non-availability of panel micro datasets and the challenges associated with identifying valid instruments, the study relies on the counterfactual framework,

adopting the propensity score matching approach in the estimations. Although the PSM cannot address all the empirical challenges raised, given data constraints, it provides a useful alternative that minimizes biases from some of the issues raised.

4.2 The Counterfactual Framework

The research questions under consideration in this study involves an impact evaluation analysis. The treatment effect approach is adopted to achieve these objectives. In the literature, impact evaluation analysis is conducted within a counterfactual (potential outcome) framework. The counterfactual framework involves constructing a hypothetical scenario that assesses what the households' expenditure would have been if they had not received remittances.

The principle underlying modern impact evaluation studies is the counterfactual framework. According to Guo & Fraser (2009), impact evaluation examines the extent to which the net difference observed in outcomes between treated and matched non-treated groups can be attributed to the intervention, *ceteris paribus*. This framework was pioneered by Rubin (1974) and has generally been referred to as the Rubin Causal Model (RCM) or the Potential Outcome framework. The model has since been adopted by several authors including Angrist, 1998; Angrist et al., 1996; J. Heckman, 1997; J. J. Heckman et al., 1997; Imbens & Angrist, 1994; Rosenbaum & Rubin, 1983. The model has been applied in statistics, econometrics and many other fields of study. Impact evaluation looks at cause and effect relationships. The modern literature on treatment effects is based on the counterfactual framework where each individual has an outcome with or without treatment. For instance, if Y_1 denotes the outcome with treatment and Y_0 the outcome

without treatment, then both Y_1 and Y_0 cannot be observed at the same time because the individual cannot be in both states. This creates the problem of missing data. The outcomes of Y_0 and Y_1 are usually binary (such as receipt of remittances).

The counterfactual framework provides a solution to missing data problem brought about by unobserved characteristics or uncontrolled differences inherent in observational studies due to self-selection (omitted variable bias) and causality (endogeneity). Suppose there is a causal effect of a binary treatment T_i on outcome Y_i for unit i ($i = 1, \dots, N$). Y_i is the observed outcome variable, T_i is the treatment variable, X_i is a vector of explanatory variables that affect the outcome, and Z_i is a vector of explanatory variables that affect the treatment assignment. Both X_i and Z_i may have the same elements. The counterfactual framework indicates that the observed outcome variable $Y_i(0)$ is Y_0 when $T_i = 0$, and $Y_i(1)$ is Y_1 when $T_i = 1$.

This can be specified as:

$$Y_i = T_i \cdot Y_i(1) + (1 - T_i) \cdot Y_i(0) \quad (1)$$

The functional forms for Y_0 and Y_1 for $T_i = 0$ and $T_i = 1$ are:

$$Y_0 = X' \beta_0 + \epsilon_0 \quad (2)$$

$$Y_1 = X' \beta_1 + \epsilon_1 \quad (3)$$

where β_0 and β_1 are coefficients to be estimated, and ϵ_0 and ϵ_1 are error terms. This potential outcome framework splits each potential outcome into a predictive constituent $X\beta_t$, and an unobservable error term, ϵ_t .

The assignment process of the treatment is:

$$T = \begin{cases} 1 & \text{if } Z'\gamma + \eta > 0 \\ 0 & \text{Otherwise} \end{cases} \quad (4)$$

where γ is a coefficient vector and η is an unobservable error term that does not relate with either X or Z .

From the framework, the observed data include Y_i , T_i , X_i , and Z_i . The framework for T_i determines how the data on Y_0 and Y_1 gets missing. Also, the framework distinguishes the potential outcomes and treatment assignment into observable and unobservable constituents. Whether η is autonomous of the vector (ϵ_0, ϵ_1) is important in specifying the set of variable estimators. The coefficient vectors β_0 , β_1 , and γ are supplementary parameters used in estimating the average treatment effect on the treated (ATT).

4.4 The Impact Analysis – Treatment Effect Model

Following the study by Boakye-Yiadom and Lambon-Quayefio, (2018), the household remittance receipts status is categorised into three. That is, households that received only internal remittances, households that received only external remittances and households that received both internal and external remittances only. Therefore, such disaggregation is used to carry out the impact evaluation analysis, assessing the effects of remittance on household spending on food, consumer durables, education, health, housing and other non-food items.

There will be two sub samples for each household category for the analysis: remittance-receiving and remittance non-receiving. These sub samples are then used to estimate equations for remittance-recipient and remittance non-recipient for each of the household expenditure category. The treated group refers to the remittance-receiving households and the control group is derived from matched non-treated group, that is households with similar characteristics that have been matched with remittance non-receiving households. These equations then become the premise for constructing appropriate counterfactuals for all the households in the sample (Boakye-Yiadom & Lambon-Quayefio, 2018).

After generating the counterfactuals, estimation of the average effect of remittance receipts on household spending is done for households that received remittances. Treatment effect is employed through matching on the propensity score.

Following Cattaneo (2010), the household remittance status, that is whether the household receive remittances or does not, can be seen as the “treatment”. The treatment effect of households receiving remittances, denoted by *Treat*, can be written as:

$$Treat_i = Y_i(1) - Y_i(0) \quad (5)$$

Where, $Y_i(1)$ denotes the household's budget share for good i if the household received remittance and $Y_i(0)$ denotes household's budget share for good i if the household did not receive remittance.

The functional form for the budget share of good i for household j (Y_{ij}) is given as:

$$Y_{ij} = \alpha_i + \beta_i \text{Remit}_j + \gamma_i X_j + \epsilon_{ij} \quad (6)$$

Where Y_i is the budget of good i ($i = \text{food, consumer durables, education, health, housing and other non-food items}$) for household j . Remit_j is a vector of binary variables which are mutually exclusive, capturing whether or not household j receives remittances (ie. internal, external and both internal and external). The coefficient of interest β_i , measures the effect of the various forms of remittance on the relevant budget shares. The X_i denotes the vector of pre-treatment characteristics comprising households' social, economic and demographic characteristics. Finally, ϵ_{ij} denotes the error term.

4.5 Estimation Procedure

The estimation technique employed for the study is based on the propensity score matching estimator of the treatment effect model. The description of the estimator is based largely on the empirical works by Angrist, (1998), Guo & Fraser, (2009), Imbens & Wooldridge, (2009), Rosenbaum & Rubin, (1983) and Caliendo & Kopeinig, (2008).

4.5.1 The Propensity Score Matching Model

The Propensity Score Matching (PSM) is employed in constructing the counterfactuals to estimate the average treatment effects. This technique is used to measure the average effect associated with the receipt of remittances by matching remittance receiving households (the treatment group) with households with similar characteristics that do not receive remittances (the control group). To estimate the effect of remittances (internal only, external only, and both external and internal only) on household spending behavior, the study measures the difference in spending patterns of household who receive remittances with those who do not.

Suppose R_j ($j = 0$ and 1) is the binary variable which equals to 1 if the subject receives treatment (household receiving remittances) and 0 if otherwise. Let R_{ij1} and R_{ij0} indicate the outcome variables of interest representing the budget share of good i for household j with treatment and without treatment respectively. The budget share of good i for household j is expressed as $Y_{ij} = C_{ij}/TE_{ij}$, where C_{ij} is the expenditure on good i for household j and TE_{ij} represents the total expenditure of the household. The treatment effect for household i measures the difference between the budget share (of good in question) of remittance receiving and remittance non-receiving households. Let τ_j be the treatment effect for a single unit, then the treatment effect is giving by:

$$\tau_j = Y_{ij1} - Y_{ij0} \quad (3)$$

then the treatment effect with and without relevant outcome indicators can be given by:

$$\tau_j = E[Y_{j1} | R_j = 1] - E[Y_{j0} | R_j = 1] \quad (8)$$

where τ_j is the average treatment effect; thus, the average difference between the treated households and matched non-treated households.

$E[Y_{j1} | R_j = 1]$ represents the expected outcome of households that receive remittances.

$E[Y_{j0} | R_j = 1]$ represents what the outcome would have been if remittance receiving household did not receive remittances.

To be able to use those who did not receive remittance as a control group,

$$E[Y_{j1} | R_j = 1] = E[Y_{j0} | R_j = 0] \quad (9)$$

Bias is given as the difference between the outcome of those who receive remittances and those who do not. It can be expressed as

$$\text{Bias} = E[Y_{j1} | R_j = 1] - E[Y_{j0} | R_j = 0] \quad (10)$$

Although the outcome is observed, its counterfactual is not. In household surveys, it is not possible to simultaneously observe subjects in two different states. Consequently, the components $E[Y_{j1} | R_j = 1]$ and $E[Y_{j0} | R_j = 0]$ are observable outcomes, whereas $E[Y_{j1} | R_j = 0]$ and $E[Y_{j0} | R_j = 1]$, representing the counterfactuals, are outcomes that cannot be observed.

Propensity score matching presents a solution to the potential bias arising from the inability to observe the counterfactual outcomes. The procedure involves calculating the propensity scores, which summarizes the pre-treatment observable characteristics of each subject. This makes it

possible to match between those who receive the treatment and those who do not. Propensity score matching methods are founded on the conditional independence assumption, which states that the outcome in the untreated state is independent of treatment participation conditional on a particular set of observable characteristics, denoted by X (Rosenbaum and Rubin 1983). This assumption requires that only explanatory variables which are not affected by remittance receipts should be included in the model. This condition implies the absence of selection due to variables that cannot be observed and can be expressed as:

$$(Y_{j1}, Y_{j0}) \perp R_j | X_j \quad (11)$$

where, given X_j , the potential outcomes are independent of the treatment status, or after controlling for X , the treatment assignment is considered random. This assumption is also referred to as unconfoundedness or selection on observables. PSM provides a solution by providing for the existence of confounding factors based on the idea that bias is reduced when the comparison of outcome is done by using treated and control subjects that are as similar as possible. This means that, given X_I , the outcomes of non-treated units can be used to estimate the counterfactual outcome of treated units in the absence of treatment.

$$E[Y_{i0} | R_i = 1, X_I] = E[Y_{i0} | R_i = 0, X_I] \quad (12)$$

Another crucial requirement is the common support or overlap condition which states that individuals with the same characteristics have equal positive probability to receive or not to receive the treatment. According to Rosenbaum & Rubin (1983), for all $X \in \mathfrak{X}, T$, where \mathfrak{X} is the support of the covariates,

$$0 < [Y_{j1} | R_j = 1] < 1 \quad (13)$$

This assumption implies that, for any setting of the covariates in the assumed population, it is highly probable to see both the control and treatment groups. This assumption rules out the likelihood that the probability score is ever zero or one. Thus, if $P_r(T = 1 | X = X_0) = 0$, then units with covariate values X_0 will certainly not be in the treated group. The probability of treatment which is a function of covariates play an important role in estimating average treatment effects generally known as propensity score and is represented by $P_r(X) = P(T = 1 | X), X \in \mathcal{X}$. This assumption is extremely crucial in models making use of the treatment effect frameworks.

The counterfactual framework also assumes that the sample size from the population is independent and identically distributed. This implies that the potential outcome and treatment level of each individual is not connected to the potential outcomes and treatment statuses of all other individuals in the population. This independent and identically distributed assumption ensures that treatment assignment is random and therefore the treatment and control units can be independent and identically observed.

However, it is almost impossible or tedious to match on individual characteristics when there are a number of covariates. According to Rosenbaum & Rubin (1983), it is possible to participate conditionally in propensity score matching denoted by $P(X)$ rather than on observable characteristics X . Therefore, the PSM facilitates matching on the propensity scores to achieves similar results. This can be expressed as:

$$[P(X_j) = \Pr [R_j = 1|X_j] \quad (14)$$

Therefore, the Counterfactual scenario can be estimated as:

$$E[Y_{j0} | R_j = 1, P(X_j)] - E[Y_{j0} | R_j = 0, P(X_j)] \quad (15)$$

Finally, the PSM estimator for the average treatment effect on the treated (ATT) is the mean difference in the outcomes over the common support, and weighted by the propensity scores of participants (Caliendo & Kopeinig, 2008)

$$ATT^{PSM} = E[Y_{j1} | R_j = 1, P(X_j)] - E[Y_{j0} | R_j = 0, P(X_j)] \quad (16)$$

Since the participation to the treatment is expressed as a binary variable, the estimation of the propensity score over a set of explanatory variables uses logistic models.

After estimating propensity scores derived from logistic model, a suitable matching estimator needs to be chosen to compare units related to treated units.

$$ATT_{match}^{PSM} = \frac{1}{T} \sum_{i=1}^T [Y_{j1} - \sum_{j=1}^N W_{(ij)} Y_{ij0}] \quad (17)$$

Where Y_{j1} is the outcome of treated unit i , Y_{ij0} is the outcome of the j th non-treated unit matched to the i th treated unit, T refers to the total number of treated units, while N means the non-treated units, and the positive valued weight function is measured by $W_{(ij)}$.

In the literature, there are several matching techniques employed to match households or individuals based on the propensity scores. This includes nearest neighbor matching, kernel matching and radius caliper methods. This study employs the nearest neighbour (NN) matching

method. In nearest neighbour matching, an individual from the control group is chosen as a matching pair for a treated individual that has the closest propensity score.

In a nutshell, to achieve the study's objectives, there are certain general procedures undertaken in the empirical analysis. Adapting the PSM of the treatment effect model, the following estimation procedures are carried out to examine the effect of the receipts of remittance by the three defined categories (sources) on household's expenditure on food, consumer durables, education, health and housing.

- i. Logit equation for the probability to receive remittance (internal, external, and both internal and external only) to estimate the propensity scores.
- ii. Generate the treatment group from households that receive remittance (internal, external, and both internal and external only) and the control group from matching households with similar characteristics (propensity scores) that receive no remittance.
- iii. Estimate the ATT from the differences in outcome between the treated group (receive internal, external, and both internal and external only remittance) and the control group (matched untreated group) for each expenditure category.

Finally, if the estimated ATT is statistically significant for any of the expenditure categories, then it can be attributed to the effect or impact of remittances.

4.6 Data Source

Data for the study is drawn from the sixth round of the Ghana Living Standard Survey (GLSS 6) conducted in 2012/2013. This is a nationally representative survey carried out by Ghana Statistical Service (GSS) under the World Bank's Living Standard Measurement Survey (LSMS). Currently, there are seven rounds of the GLSS, with the most recent being GLSS 7 conducted in 2016/2017. However, the GLSS 6 is preferred for this study because it captures and draws a distinction between internal and external remittances unlike GLSS 7 which captures only internal remittances. The GLSS 6 covered a representative sample of 18,000 households in 1,200 Enumeration Areas (EAs). Of the 18,000 households, 16,772 were successfully enumerated with a response rate of 93.2 percent (GSS, 2013).

Information on remittances is defined and measured to include transfers received by households in the form of cash, food items and non-food items. In this study, households categorized as receiving remittance are assumed to receive the reported amount in the survey. Also, households which report having migrants but do not report receiving remittances are regarded as non-receiving households while households that do not have migrants but report to have received remittances are considered as remittance receiving households. The GLSS 6 provides information on six major expenditure categories. These are food, consumer durable goods, education, health, housing and other non-food items. These expenditures are aggregated to obtain yearly values in the datasets.

The categorization of expenditure is based on the United Nation's classification of individual consumption according to purpose (COICOP). This system of categorization groups expenditure

into food and non-food. The non-food comprise expenditure on items including alcoholic drinks, tobacco and narcotics, clothing and footwear, housing, water, electricity, gas and other utilities, health, education, recreation and durable goods. In this study, the non-food category has been further grouped into consumer durable goods, education, health, housing and other non-food items.

4.7 Definition of variables

4.7.1 Dependent variables

The dependent variables for the study are the six different expenditure shares from households' expenditure on goods and services. These shares are generated from household's expenditure on food, consumer durable goods, education, health, housing and other non-food items. Table 4.7.1 shows the composition of the six categories of households' expenditure. The dependent variables are explained below:

Budget share of food: This refers to the ratio households' expenditure on food to its total expenditure. This captures household's expenditure on both purchased and non-purchased food items as captured in Table 4.7.1.

Budget share of consumer durable goods: This refers to the ratio of households' expenditure on consumer durables to its total expenditure (refer to Table 4.7.1).

Table 4.7.1 Expenditure Categories from GLSS, 2012/2013

Category	Description	Examples
Food	Purchased food	Foodstuff such as corn, bread, yam, milk, meat, fish, fruit, vegetables
	Non-purchased food	Food from: self-production, gifts, donations
Consumer & durable goods	Consumer goods Household durables	Clothing, footwear Household chattels such as refrigerator, furniture, television, car
Education	Educational expenses	Books, uniforms, school fees
Health	Health expenses	Consultation fees, medicine, hospitalization
Housing	Housing value	Usage value of housing (calculated from rental payments or imputed values)
Other non-food	Utilities Transport, communication Entertainment	Water, electricity, telephone, transportation fees, postage, vacation cost

Source: Authors compilation from GLSS 6

Budget share of education: This refers to the ratio of the households' expenditure on education to the household's total expenditure. This measures household expenses on education as captured in Table 4.7.1.

Budget share of health: Refers to the ratio of the households' expenditure on health to the household's total expenditure. This variable capture household expenses on health.

Budget share of housing: Refers to the ratio of households' spending on housing to the households' total expenditure. This variable captures the annual use of houses for the household. It is estimated from rental payments or imputed values.

Budget share of other non-food items: This refers to the ratio of the households' expenditure on other expenses to its total expenditure.

Spending on food and consumer durable goods are regarded as consumption expenditure while that on education, health and housing are considered as investment-type expenditure.

4.7.2 Explanatory variables

The covariates used for the study are based on theoretical and empirical literature. These comprise household level demographic characteristics, socioeconomic characteristics of the household head and locational variables such as place and region of residence. The variable of interest for the study is the household receipts of remittance.

Remittance: This is the variable of interest in this study. This is a dummy variable that measures whether the household receives remittances or not. It is coded one (1) for households that receive remittances and zero (0) for those that do not receive remittance. It is further categorized into three based on the origin of the remittance. Internal remittance, for household that receive remittances within Ghana; external remittance for households that received remittances from abroad and both remittance for households that received both remittances from within Ghana and abroad only.

Studies show that internal and external remittances affect household consumption behavior differently. Some researchers found that internal remittances are spent on daily consumption expenditures while external remittances are inclined to increase household spending on investment goods (Adams & Cuecuecha, 2010, 2013; Adams et al., 2008; Castaldo & Reilly, 2007; Clément, 2011).

Household Size: This is a continuous variable that captures the number of people living in a particular household. The household size is hypothesized to affect the probability for the receipt of remittances (Adams, 1993). The household size is considered to influence the frequency and amount of remittance inflows as well as household expenditures.

Number of children from 0-5 years: This is a continuous variable that measures the number of children below age six in the household. Children below six years, also referred to as infants, are regarded as vulnerable and dependent age groups and could influence the probability of remittance receipt.

Number of children from 6-15 years: This is a continuous variable that measures the number of children of school-going age. This age category also captures a unique group of children who are in their formative years and have varying needs. This can influence the remittance inflows into households to support such needs.

Number of persons above 60 years: This is a continuous variable that measures the number of the elderly, in the household. This variable usually refers to pensioners and the aged who are dependent on the household. The presence of this age category in the household can therefore influence the remittance flow into such households.

Dependency ratio: This variable refers to the ratio of children below 15 years and the elderly to the working class in the household. It measures the extent of dependency in the household.

Number of males above 15 years in a household: This variable refers to the number of adult males above 15 years in the household. This measures the composition of the working class in the household.

Age of household head: This variable is continuous and captures the age of the household head in years. The square of the age of the household head is used to assess the possibility of non-linearity. Age could have varying impact on expenditure behaviour (Weagley & Huh, 2004). Also, Anyanwu (2014) explains the non-linear impact of age using an inverted U-shape; individuals tend to consume less at relatively young age, consume more during the middle age and reduce consumption as they grow old.

Sex of household head: This is a dummy variable that captures the gender of the household head. It is coded one (1) for female and zero (0) for male. Gender influences the spending pattern of remittance receiving households (Gubert et al., 2010). Guzmán et al. (2008) for instance reports

that female headed households are inclined to spend more on education and health while male headed households spend on housing.

Education level of household head: This is a categorical variable that captures the formal education of the household head. In this study, it is categorized as “none” for those with no formal of education (as reference), “basic” for those with primary, Junior secondary and middle school education, “secondary” for those with senior secondary education, “voc/tech” for those with vocational and technical education and “tertiary” for those with university and post-secondary education. Education is principal as it reflects the ability of household heads to put remittance received into effective use (Anyanwu, 2014). Human capital models show that human capital variables may affect migration and remittance because the more people are educated, they tend to enjoy greater employment and earning potentials (Schultz, 1982; Todaro, 1986).

Place of residence: This is a dummy variable that captures whether the household is located in an urban or a rural area. This variable captures the disparities of households in rural and urban areas. It is coded one (1) for rural and zero (0) for urban.

Region: This variable is made up of the ten administrative regions and controls for the regional disparities that may influence living standards and hence households’ expenditure decisions. The reference region is Western region.

4.8 Diagnostics and Post-Estimation Tests

To confirm that estimated coefficients for the analysis are robust, unbiased and consistent, some diagnostic and post-estimation tests are carried out on the output from the regression model used. In this study, diagnostic tests are done to measure the performance of the matching process. The following test are conducted to check the robustness of the estimates:

1. T-test for equality of means of covariates in the treated and control groups as well as standardized bias before and after the matching process and the achieved percentage bias reduction.
2. Testing for the sensitivity of the matching estimates to the presence of unobserved characteristics using the Rosenbaum bonds analysis (Rosenbaum, 2002)

4.9 Data analysis

Stata 15 is used to run all the regressions to produce the required coefficients and the necessary statistical tests for the results. Descriptive statistics of the sample and results of the estimated models are published using tables and simple graphics for ease of understanding. Microsoft Excel is also used in producing some of the charts, and graphs.

4.10 Estimations and Discussion of Results

This section provides insight on results of the study. That is, it focuses on the descriptive statistics and the empirical results obtained from executing the necessary estimations. Analysis and discussion on the findings as well as inferences are made on the effect of remittances on household spending decisions.

4.11 Descriptive Statistics

4.11.1 Remittances

The data from GLSS 6 reveals that over a third (34%) of households in Ghana receive remittances. Out of households that receive remittances, about 86% receive internal remittance only, 10% receive external remittance only and 4% receive both internal and external remittance only (Table 4.11.1). The relatively low percentage of households receiving both internal and external remittances imply that receiving internal remittances and receiving external remittances are two different issues and may have potentially different effects on household expenditures.

Table 4.11.1: Proportions of Remittance Beneficiaries

Households by Remittance Source	All	Rural	Urban
Internal Remittance	86	62	38
External Remittance	10	28	72
Both (Internal and External only)	4	38	62

Source: Authors compilation from GLSS 6. All figures are in percentages

Table 4.11.1 presents the proportion of beneficiaries of remittances by source. It can be seen that 62% of rural households receive internal remittance while 38% are received by urban households. With the receipt of external remittance, urban households receive 72% as against 28% for rural household. Similarly, urban households receive 62% of both (internal and external) remittance only as compared to 38% to rural households. Therefore, the report suggests that a higher proportion of rural households receive internal remittances while a higher proportion of urban households receive external remittance as well as both (internal and external) remittance only in Ghana.

4.11.2 Household Expenditure Behaviour

In Table 4.11.2, the average budget shares before matching for the various expenditure categories are presented for remittance receiving and non-receiving households. The main component of consumption budget shares are food and consumer durables; accounting for 57% and 12% respectively of the mean total budget. Investment expenditures are mainly devoted to education, health and housing and are relatively low. They account for 0.7%, 0.1% and 0.7% respectively of household expenditure budget.

Table 4.11.2: Average Budget shares

	Remittance Receiving Households	Remittances Non-Receiving Households	Difference	two-way t- test (t- statistics)	Pr(T > t)
Food	0.571	0.579	0.008	2.48	0.013**
Consumer Durables	0.123	0.120	-0.003	-3.14	0.002***
Education	0.070	0.067	-0.003	-2.06	0.040**
Health	0.012	0.009	-0.003	-7.48	0.000***
Housing	0.071	0.069	-0.002	-1.61	0.108
Other non-food items	0.152	0.157	0.005	2.16	0.031**

*, ** and *** refers to significance at 10%, 5% and 1% respectively

Households that receive remittance are associated with less spending on food and more on consumer durable goods. The decline in the budget share on food supports the Engel's law; as income increases, a lesser proportion is devoted to food expenditure. Goods in the investment category indicate that, households that receive remittance spend more on education and health. Although the receipt of remittances also increases the budget share of consumer durable goods (a consumption good), the increase in the expenditure share for education and health appear to support the optimistic view that remittances have the tendency to increase expenditure on investment-type goods (Adams & Cuecuecha, 2013; Clément, 2011; Thapa & Acharya, 2017).

4.12 Empirical Results

4.12.1 Propensity Score Estimation

The estimation of the propensity scores, calculated for the various categories of households using the logistic model, shows the effect of each explanatory variable on the probability to be in one of

the treatments. Appendix 2 shows the logistic regressions for each treatment for all household's category. Specifically, it reports the estimation of the logit model with the probability of receiving internal remittances only versus no remittances, external remittances only versus no remittances, both internal & external remittance only versus no remittance with a number of covariates (such as, socioeconomic features, household features and regional controls). Generally, the model can be considered to have performed reasonably well and as such the covariates matter for the motivation to remit. The signs and significance are consistent with theory, the wald chi-square and pseudo R-squared are generally favorable.

As indicated earlier, the study employs the nearest neighbour matching [NN(1)] technique to compare an average household's characteristics within the treatment sample to the corresponding characteristics of the control group to estimate the average treatment effects. Appendix 3 provides results from other matching techniques. The outcome of the matching for all the treatments can be considered to be valid. This is because the difference in the mean of most covariates between treated and control groups after matching are not statistically significant.

The study employs the propensity score test to measure the extent of balancing of the variables between two groups, that is, measure comparability of covariates before and after matching. This helps in estimating the standardized percentage bias¹ before and after the matching process as well as the achieved percentage reduction in bias. The results in appendix 4-6 show that the means of most of the covariates do not differ between remittance receiving households (treated) and

¹ The standardized bias is the difference of the sample means in the treated and non-treated sub-samples as a percentage of the square root of the average of the sample variances in the treated and non-treated group

remittance non-receiving households (control groups). More so, it shows that, there has been a significant reduction in bias after matching for the covariates in all household categories.

Furthermore, Table 4.12.1 shows that the mean bias for all covariates in each model after matching is within the acceptable range (Rubin's R and B values) except for that of Both remittances. The estimated Rubin's R [the ratio of treated to (matched) non-treated variances of the propensity score index] are actually within standard value of (0.5, 2) in all but one of the models. Also, Rubins' B [the absolute standardized difference of the means of the linear index of the propensity score in the treated and (matched) non-treated group] values are less than 25 per cent in all but one of the models as required. These evidence show that the samples are thus sufficiently balanced (Table 4.12.1).

Table 4.12.1: Summary of Covariates Balancing

Sample	Ps R2	LR chi2	p>chi2	Mean Bias	Median Bias	B	R	%Var
Total Remittance								
Unmatched	0.067	1441.48	0	12.9	10.5	62.7*	1.43	100
Matched	0.002	28.61	0.194	1.9	1.7	10	0.93	13
Internal Remittance								
Unmatched	0.123	551.37	0	21.5	17.3	108.0*	0.62	75
Matched	0.007	11.38	0.979	3	2.4	20.3	1.03	13
External Remittance								
Unmatched	0.071	1407.3	0	13.7	10.6	65.0*	1.33	88
Matched	0.003	36.18	0.04	2.3	2.5	12.1	0.9	75
Both Remittance								
Unmatched	0.157	326.58	0	27.6	21.7	128.9*	1.05	63
Matched	0.018	10.18	0.99	5.8	5.5	31.3*	1.39	13

* if B>25%, R outside [0.5; 2]

Furthermore, sensitivity analysis is conducted to verify whether inferences about the effect of remittances are altered by the presence of unobservable household's characteristics affecting both the probability of receiving treatment and the outcome variables. The Rosenbaum bounds (rbounds) has been employed as suggested by Rosenbaum (2002) and Becker and Caliendo's (2007). The null hypothesis is the impact of remittance on outcome variables is due to unobservable covariates. The treatment effect estimators are not robust if unobserved factors are also correlated with the outcome. Appendix 8 reports the upper bounds at 95% confidence interval for all the models. The results from Rosenbaum bound sensitivity analysis shows that the test-statistics and the respective p-values for different values of gamma² (the critical values of gamma) is significant at 95% confidence level, implying that the null hypothesis is rejected. Thus, the impact on outcome is due to treatment effects and that, it is not due to unobserved factors for the outcome variables considered.

4.13 Effect of Remittances on Household Expenditure Behaviour

The general objective of this study is to determine how the receipt of remittance from any source (overall or total remittance) affects household expenditure decisions. The average treatment effects are reported in Table 4.13 for total (overall) remittance. In general, the results support the optimistic view that remittances are more likely to increase human capital investment. Thus, the results depict that receiving remittance income is more likely to increase the share of household budget allocated to education by 0.7 percentage points and health by 0.3 percentage points. Also,

² Gamma - log odds of differential assignment due to unobserved factors

remittance receiving households reduce their share of household budget devoted to food by 1.7 percentage points.

Table 4.13: Average Treatment Effect (Total Remittance)

Variables	Treated Group	Control Group	Difference	t-Stats
Food	0.57	0.59	-0.0170	-3.81***
Consumer Durables	0.12	0.12	0.0023	1.33
Education	0.07	0.06	0.0074	3.10***
Health	0.01	0.01	0.0028	5.08***
Housing	0.07	0.07	0.0016	0.81
Others	0.15	0.15	0.0030	0.95

*, ** and *** refers to significance at 10%, 5% and 1% respectively

Therefore, the receipt of remittance is associated with a reduction in the expenditure share for food and this is channeled to increase spending on human capital development investment (education and health). These conclusions are in line with the result by Adams & Cuecuecha (2010, 2013); Göbel, (2013) and Thapa & Acharya (2017).

The specific objective of the study is to ascertain how the receipt of remittances by source or origin affects household's spending decisions. As such, a discussion of the results for the receipt of internal remittance, external remittance and both (internal and external only) remittance on household expenditure categories is carried out.

4.13.1 Internal Remittance

On the effect of the receipt of internal remittance on household spending decisions, Table 4.13.1 presents the report of the average treatment effects. The results are qualitatively the same as the effect of receipt of total remittance on spending decisions. The result suggests that households that receive only internal remittance decrease food expenditure share by 1.7 percentage points. However, the budget share for education and health increases by 0.7 and 0.3 percentage points respectively, with the receipt of internal remittance.

The decline of expenditure share of food with the receipt of internal remittance is consistent with studies by Adams & Cuecuecha (2013) on Ghana. However, this result is in contrast with similar studies on Nepal by Thapa & Acharya (2017), on Senegal by Randazzo & Piracha (2014) and on Tajikistan by Clément (2011). While the studies on Senegal and Tajikistan showed no significant impact, the study on Nepal reported a positive impact of internal remittance on household food budget share. Furthermore, the results are consistent with the optimistic view that remittance positively influence investment-type goods (i.e., education and health).

The differences in income levels of the various countries could account for these varying outcomes. Income levels in Ghana are relatively higher as such, most households can afford to reduce the budget allocation for food and put into other productive use while the relatively low income of households in Nepal are more concerned with using the internal remittance received to meet daily food needs. With Ghana attaining lower middle-income status, households are now in

the position to reduce expenditure on food and channel it into a more productive use (such as: education, health). It appears that since majority of internal receiving households are in the rural areas (62%), an increase in income through remittance inflows enable these households to invest more in education and health which they could not afford previously.

Table 4.13.1: Average Treatment Effect (Internal Remittance)

	Treated Group	Control Group	Difference	t-Stats
Food	0.59	0.60	-0.0173	-3.73***
Consumer Durables	0.12	0.12	0.0029	1.60
Education	0.07	0.06	0.0071	2.86***
Health	0.01	0.01	0.0025	3.99***
Housing	0.07	0.07	0.0029	1.40
Others	0.14	0.14	0.0019	0.61

*, ** and *** refers to significance at 10%, 5% and 1% respectively

4.13.2 External Remittance

The results for external remittances are presented in Table 4.13.2. The results show that, external remittances are devoted to unproductive activities. The receipt of external remittance inflows is associated with increases in the expenditure shares for consumer durables and other non-food items by 1.4 and 1.9 percentage points respectively. It is interesting to note that, though education and health budget share increases, they are not significant. Similarly, just as with the other sources of

remittance, external remittance recipients reduce expenditure share of food by 4.7 percentage point. The impact of the reduction is higher than that of internal and total remittance. A plausible reason for this outcome is that, since majority of urban households (72%) are the recipient of external remittances, they may be better off already, hence remittance received may not go into basic consumption. Most of them rather spend such income on more consumer durable goods (some luxury goods) and other non-food items.

These results are consistent with studies by Adams & Cuecuecha, (2010, 2013); Göbel, (2013) and Castaldo & Reilly, (2007). The effect of external remittance on food expenditure share in this study also supports the Engel's Law which states that as income rises, the budget share of food declines. This finding, is also consistent with that of Taylor & Mora (2006) and Zarate-Hoyos (2004). The positive effect of external remittance on budget share for consumer durables from this study is also supported by studies such as Thapa & Acharya (2017) and Randazzo & Piracha (2014). Therefore, it appears external remittances support the pessimistic view that the inflow of remittance has no effect on household spending on investment-type goods. This is supported by studies on Guatemala and other Latin America countries (Adams & Cuecuecha 2010; Acosta et al., 2008), Indonesia (Adams & Cuecuecha, 2016), Senegal (Randazzo & Piracha, 2014) and Nepal (Thapa & Acharya, 2017).

Table 4.13.2: Average Treatment Effect (External Remittance)

	Treated Group	Control Group	Difference	t-Stats
Food	0.45	0.50	-0.0469	-4.30***
Consumer Durables	0.13	0.12	0.0142	3.16***
Education	0.09	0.08	0.0114	1.54
Health	0.01	0.01	0.0002	0.12
Housing	0.09	0.09	0.0018	0.34
Others	0.22	0.20	0.0193	2.16*

*, ** and *** refers to significance at 10%, 5% and 1% respectively

4.13.3 Internal & External Remittance only

The effect of receiving both (internal and external) remittances on the household expenditure decisions is positive but insignificant for consumer durables and human capital investment, while it has a negative and significant effect on the expenditure share of food. The results as depicted in Table 4.13.3 neither support the optimistic nor the pessimistic views on the usage of remittance inflows. However, households receiving both internal and external remittance only spend more on other non-food items.

**Table 4.13.3: Average Treatment Effect
(Both Internal& External Remittance only)**

	Treated Group	Control Group	Difference	t-Stats
Food	0.51	0.58	-0.0696	-3.91***
Consumer Durables	0.12	0.12	0.0022	0.32
Education	0.08	0.07	0.0129	1.32
Health	0.08	0.07	0.0035	1.20
Housing	0.08	0.08	0.0003	0.04
Others	0.20	0.14	0.0507	3.66***

*, ** and *** refers to significance at 10%, 5% and 1% respectively

The negative impact of both internal and external remittance on food expenditure share equally supports the Engel's law. The results suggest that households that receive both remittances (internal and external only) spend more on other non-food items than non-receiving households. With 62% of the recipients of both remittances in the urban areas where the households may be better off, receiving such inflows may be put into other uses other than consumption and investment. These households appear rather to spend more on other non-food items such as entertainment, utilities and communication.

4.14 Conclusion

The PSM is increasingly prevalent in the assessment of economic policy interventions (Becker & Ichino, 2002) and also in studying the connection among migration, remittance and household expenditure (Bohra-Mishra, 2013; Clément, 2011; Esquivel & Huerta-Pineda, 2007; Thapa & Acharya, 2017).

Generally, the results from households that receive any form of remittances seem to support the optimistic view that remittance are spent on productive activities. This is evidenced by the increase in the budget share of human capital variables (education and health). When the specific remittance received by source are considered, the receipt of internal remittance supports the productive use of remittance, as it leads to increases in the budget shares of education, health and housing. In contrast, the receipt of only external remittance and both (internal and external only) remittance does not support the productive use of remittance.

The findings of this study therefore appear to support the growing opinion in the literature that the inflow of remittances can positively affect economic development through increasing expenditure on human capital.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This study examined the effects of remittance on households' spending decisions using the 2012/2013 Ghana Living Standard Survey dataset. In the process, the study specifically examined how remittance by source/origin affects the spending behaviour of households. That is, how the receipt of internal remittance, external remittance, and both (internal and external) remittance affect households' spending decisions. A key feature of the study's methodological approach has been the application of econometric technique to construct counterfactual scenarios. Specifically, the propensity score matching estimator of the treatment effect model is employed in addressing the research questions. The PSM was employed to estimate the average treatment effect (ATT) to evaluate how the various sources of remittance affects households spending decisions.

5.1 Summary of main findings

The study's results highlight the role of remittance in human capital investment for remittance receiving households. The results found that, generally, households that received any form of remittance reduce their budget share for food but increase the budget allocation on human capital investments (education and health). For households that receive internal remittance only, the result appears to support a productive use of remittances. That is, internal remittance receiving households as associated with a decline in the budget share for food which is reallocated to

increased spending on education and health. However, the receipt of external remittances seems to support the unproductive use of remittance inflows. The result does not appear to support a significant impact on education and health spending. Finally, with households that receive both internal and external remittance only, the results suggest that these households spend more on other non-food items rather than on consumption and investment goods.

5.2 Conclusion

Literature on the effect of remittance on household expenditure behaviour is dominated by studies in Latin America and Caribbean countries. Although the results are quite mixed, some recent studies appear to support the optimistic view that remittances are spent on productive activities such as education, health and housing. In Sub Saharan Africa, there are few studies on remittances (by the various sources) and households' spending decisions. This necessitated the need to conduct this research within a Ghanaian and an African context, contributing to the literature from Sub Saharan Africa.

The study found that, in general, the receipt of any form of remittance has a significant positive impact on human capital investment such as education and health in Ghana. Similarly, the receipt of internal remittance only also supports a positive impact on human capital investment (education and health) and private investment (housing). However, households that receive external remittance only and both (internal and external only) remittance do not support the productive use of the remittance received. Most of these results are congruent to studies by Adams & Cuecuecha (2010, 2013) and Randazzo & Piracha (2014).

The findings of this thesis will hopefully enhance knowledge and understanding of how remittance inflows are spent, and help formulate more effective policies in Ghana and other developing countries to maximize the economic tradeoff that accrue from such remittance flows

5.3 Policy Recommendation

From the findings, the study makes these ensuing recommendations. First, with a significant positive effect of internal remittance on the budget shares of education and health, there is the need to create conducive conditions that facilitate the transfer and receipt of such remittances. The central bank needs to create a conducive institutional and legal framework that facilitates the receipt of remittances. This can be done by strengthening the channels of remittance transfers including banks, money transfer companies and network linkages. More specifically, the central bank should increase market competition by licensing more remittance service providers. This has the potential to spur creativity and innovations to make remittance flows easily, fast and at a reduced cost.

Although the scope of this study did not include the cost of remittance receipt, the cost of sending and receiving remittances (both internal and external) seem to be a disincentive to remittance flows especially through the formal channels. This is one of the reasons why the informal channels are still relevant in remittance flows. The government and central bank should work out modalities to reduce the cost associated with the receipt of remittances. In addition to ensuring market competition, the government should provide some form of tax credit to remittance service

providers equal to the reduction in fees paid by the senders and recipients. A reduced cost of remittance has the potential to increase the frequency and amounts of remittances flow and this imply a greater impact on the human capital investments.

Furthermore, government should provide some incentive scheme to attract external remittance inflow. This can be done by allowing migrants to deposit remittances in repatriable foreign currency accounts with domestic banks. These accounts allow migrant workers to deposit funds in banks located in Ghana with the assurance that they will be able to make withdrawals at their discretion. The decision to utilize such accounts by migrant workers will to a large extent be dependent on the interest rates on the deposits as compared to the world capital markets.

Finally, the results suggest remittances has the potential to positively impact local development. Since households that receive remittances are more likely to devote more of their budget to education and health, in order to increase the returns on education and/or healthcare service utilization, the government, through the ministries of education and health has to complement these by improving the quality of education and health facilities.

5.4 Limitation of the study

The main limitation of this study comes from the data used for the analysis. The GLSS 6 datasets has limited information on remittances hence, served as a hinderance to in-depth analysis. For instance, the gender of the remitter and purpose of the inflow (from the remitter's view) would have enriched the analysis on the motives for remitting as well as incorporating the gender dynamics in the analysis since these are key variables influencing household spending decisions. The GLSS 6 relied on information provided by the household head, without pairing the remitter to the household head. Pairing the remitter with the household head would have enabled the study to ascertain household's bargaining power, which is key in resource allocation in the household.

Furthermore, the six expenditure categories used to measure household's expenditure behaviour could pose some challenges. This is because, these amounts are declared by the household heads or respondents in the survey and are assumed to be exactly the amount spent without any other information. The possibility of household heads or respondent to be unable to recall the expenditure amounts can affect the quality of the dataset.

5.5 Recommendations for future research

Based on this study's conclusions, there are prospects for further research work. It will be illuminating to incorporate gender dynamics in the analysis. That is, to examine how the gender of the remitter and the recipient influences how remittances are spent. Regarding the acquisition of further insight into productive use of remittance inflows, a potentially interesting area for future

work will be examining how it affects savings and financial investments. Furthermore, alternative approaches to estimating the impact of remittances on households spending decisions can be investigated in follow-up studies.

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APPENDICES

Appendix 1: Descriptive statistics

Variables	All	Remittance Recipients	Remittance Non-Recipients
	<i>Mean (Standard deviations)</i>		
Household size	4.26(2.78)	4.07(2.72)	4.36(2.81)
Children 0-5 yrs	0.69(0.93)	0.6(0.87)	0.73(0.95)
Children from 6-15yrs	1.16(1.39)	1.1(1.35)	1.18(1.41)
Elderly (>60ys)	0.28(0.54)	0.4(0.62)	0.22(0.49)
Dependency ratio	12.66(18.03)	11.42(17.17)	13.29(18.42)
Males above 15yrs	1.15(0.92)	1.04(0.96)	1.21(0.9)
Head_age	45.84(15.9)	49.22(17.88)	44.1(14.47)
Head_age squared	2354.04(1641.37)	2742.75(1892.83)	2154.51(1456.3)
Consumer durables budget share	0.12 (0.07)	0.12 (0.07)	0.12 (0.07)
Education Budget share	0.07 (0.1)	0.07 (0.1)	0.07 (0.1)
Health budget share	0.01 (0.02)	0.01 (0.03)	0.01 (0.02)
Housing budget share	0.07 (0.08)	0.07 (0.08)	0.07 (0.08)
Other non-food share	0.16 (0.13)	0.15 (0.13)	0.16 (0.13)
Total remittance	0.34 (0.47)	1 (0)	0 (0)
Internal remittance	0.31 (0.46)	1 (0)	0 (0)
External remittance	0.05 (0.21)	1 (0)	0 (0)
Both internal and external remittance	0.02 (0.13)	1 (0)	0 (0)
	<i>Percentages</i>		
<i>Household head Education</i>			
No education	50.72	53.21	49.45
Secondary edu	30.49	29.5	31
Voc/Tech edu	8.49	7.95	8.77
Tertiary	4.64	4.68	4.63
<i>Head Sex</i>			
Male	71.8	60.27	77.72
Female	28.2	39.73	22.28
<i>Area</i>			
Urban	44.39	42.96	45.12
Rural	55.61	57.04	54.88
<i>Region</i>			
Western	10.24	9.37	10.69
Central	9.55	7.28	10.72
Greater Accra	11.47	6.87	13.83

Variables	All	Remittance Recipients	Remittance Non-Recipients
Volta	9.38	12.13	7.98
Eastern	10.76	13.13	9.54
Ashanti	11.81	14.19	10.59
Brong Ahafo	9.66	10.51	9.23
Northern	10.15	9.76	10.35
Upper East	8.63	9.25	8.31
Upper West	8.34	7.52	8.76
Observations	16772	5689	11083

Appendix 2: Logistic Regression for Remittance Receipt

Variables	Total Remittance		Internal Remittance		External Remittance		Both Internal and External Remittance	
	Coefficient	SE	Coefficient	SE	Coefficient t	SE	Coefficient t	SE
Household characteristics								
Household Size	-0.023	0.026	-0.033	0.028	-0.004	0.067	-0.025	0.093
Children below 6yrs	-0.005	0.034	0.003	0.036	0.013	0.090	-0.117	0.141
Children from 6-15yrs	0.010	0.029	0.022	0.030	0.005	0.076	-0.032	0.114
Elderly	0.255***	0.048	0.228***	0.051	0.424**	0.123	0.704***	0.152
Dependency ratio	0.002	0.002	0.003	0.002	0.003	0.005	0.011	0.007
Males above 15 years	-0.054*	0.033	-0.056	0.035	0.053	0.084	-0.308*	0.136
Household head age	-0.044***	0.007	-0.049***	0.007	-0.014	0.018	0.029	0.025
Household head age2	0.001***	0.000	0.001***	0.000	0.000	0.000	0.000	0.000
Household head sex	0.791***	0.046	0.801***	0.049	0.754***	0.117	0.822***	0.192
<i>Household head education level</i>								
Basic	0.171***	0.043	0.111**	0.046	0.733***	0.124	0.492**	0.194
Secondary	0.276***	0.068	0.110	0.074	1.176***	0.159	1.117***	0.264
Voc/Tech	0.224**	0.085	0.063	0.093	1.104***	0.182	0.932**	0.302
Tertiary	0.159*	0.082	-0.037	0.092	1.087***	0.178	1.026**	0.300
Locational characteristics								
Rural	0.025***	0.039	0.149***	0.041	-0.893***	0.114	-0.572***	0.165
<i>Regions</i>								
Central	-0.413***	0.080	-0.343***	0.085	-0.725***	0.204	-1.376***	0.380
Greater Accra	-0.625***	0.081	-0.657***	0.090	-0.562**	0.166	-1.363***	0.336
Volta	0.449***	0.076	0.557***	0.080	-0.524**	0.219	0.212	0.280
Eastern	0.367***	0.073	0.459***	0.078	-0.177	0.186	-0.259	0.292
Ashanti	0.365***	0.072	0.341***	0.078	0.421**	0.153	0.151	0.263

Variables	Total Remittance		Internal Remittance		External Remittance		Both Internal and External Remittance	
	Coefficient	SE	Coefficient	SE	Coefficien t	SE	Coefficien t	SE
Brong Ahafo	0.238**	0.076	0.193**	0.082	0.470**	0.166	0.589**	0.263
Northern	0.279***	0.078	0.424***	0.082	-1.950***	0.432	-0.376	0.377
Upper East	0.229**	0.080	0.345***	0.084	-1.248***	0.332	-0.479	0.361
Upper West	0.036	0.083	0.178**	0.086	-1.487***	0.362	-2.232**	0.748
Constant	-0.376*	0.162	-0.450**	0.169	-3.269***	0.428	-5.572***	0.714
Observations	16,772		16,006		11,640		11292	
Wald chi2	1446		1410		553		329	
Pseudo R2	0.0673		0.0714		0.1237		0.1581	

*, ** and *** refers to significance at 10%, 5% and 1% respectively

Appendix 3: Estimates of ATT using Different Matching Estimators

	Kernel		Radius (0.001)		NN (1)	
	ATT	T	ATT	t	ATT	T
<i>Total Remittances</i>						
Food	-0.022(0.003)	-6.77***	-0.021(0.003)	-6.23***	-0.017(0.004)	-3.81***
Consumer durables	0.003(0.001)	2.51	0.004(0.001)	2.94	0.002(0.002)	1.33
Education	0.006(0.002)	3.51***	0.006(0.002)	3.21***	0.007(0.002)	3.1***
Health	0.002(0)	5.19***	0.002(0)	5.11***	0.003(0.001)	5.08***
Housing	0.004(0.001)	2.59	0.002(0.002)	1	0.002(0.002)	0.81
Others	0.006(0.002)	2.82	0.007(0.002)	3.09	0.003(0.003)	0.95
<i>Internal Remittance</i>						
Food	-0.015(0.003)	-4.65***	-0.018(0.003)	-5.24***	-0.017(0.005)	-3.73***
Consumer durables	0.002(0.001)	1.35	0.003(0.001)	2.17	0.003(0.002)	1.6
Education	0.006(0.002)	3.13***	0.006(0.002)	3.24***	0.007(0.002)	2.86***
Health	0.002(0)	5.07***	0.002(0)	4.55***	0.002(0.001)	3.99***
Housing	0.004(0.001)	2.41	0.003(0.002)	1.63	0.003(0.002)	1.4
Others	0.002(0.002)	0.86	0.004(0.002)	1.78	0.002(0.003)	0.61
<i>External Remittance</i>						
Food	-0.097(0.007)	-13.37	-0.058(0.008)	-7.32	-0.047(0.011)	-4.3
Consumer durables	0.012(0.003)	3.56	0.015(0.003)	4.27	0.014(0.004)	3.16
Education	0.02(0.005)	3.78	0.009(0.006)	1.7	0.011(0.007)	1.54
Health	0.001(0.001)	1.46	0.001(0.001)	0.95	0(0.001)	0.12
Housing	0.015(0.004)	3.96	0.003(0.004)	0.64	0.002(0.005)	0.34
Others	0.05(0.006)	7.99	0.03(0.007)	4.55	0.019(0.009)	2.16
<i>Both Internal and External</i>						
Food	-0.068(0.012)	-5.56***	-0.057(0.013)	-4.33***	-0.07(0.018)	-3.91***
Consumer durables	0.005(0.005)	1.03	0.01(0.005)	1.86	0.002(0.007)	0.32
Education	0.011(0.007)	1.61	0.006(0.008)	0.86	0.013(0.01)	1.32
Health	0.003(0.002)	1.56	0.002(0.002)	0.82	0.004(0.003)	1.2
Housing	0.01(0.005)	1.99	0.003(0.006)	0.48	0(0.009)	0.04
Others	0.038(0.01)	3.67***	0.037(0.011)	3.24***	0.051(0.014)	3.66***

*, ** and *** refers to significance at 10%, 5% and 1% respectively

Appendix 4: Balancing test (Total remittance)

Variable	Sample	Treated (mean)	Control (mean)	% Bias	% Bias reduction	P>{t}
Household size	Unmatched	4.074	0.362	-10.4		0.000***
	Matched	4.077	0.97	3.9	62.8	0.036*
Children below 6yrs	Unmatched	0.605	72706	-13.4		0.000***
	Matched	0.605	56502	4.4	67.1	0.013**
Children from 6-15yrs	Unmatched	1.099	0.184	-6.1		0.000***
	Matched	1.1	0.042	4.2	31.8	0.022**
Elderly	Unmatched	0.396	21556	32.3		0.000***
	Matched	0.395	39609	-0.3	99.1	0.892
Dependency ratio	Unmatched	11.41	3.292	-10.5		0.000***
	Matched	11.42	1.045	2.2	79.5	0.233
Males above 15yrs	Unmatched	1.04	0.205	-17.7		0.000***
	Matched	1.041	0.057	-1.7	90.3	0.370
Rural	Unmatched	0.57	54877	4.4		0.008**
	Matched	0.57	57241	-0.5	88.6	0.791
Head_age	Unmatched	49.22	4.103	31.5		0.000***
	Matched	49.17	9.449	-1.7	94.6	0.412
Head_age2	Unmatched	2742	154.5	34.8		0.000***
	Matched	2735	774.7	-2.3	93.3	0.278
Head_sex	Unmatched	0.397	22277	38.4		0.000***
	Matched	0.397	0.389	1.7	95.5	0.387
Head_Basic edu	Unmatched	0.295	31002	-3.3		0.045**
	Matched	0.295	29667	-0.3	90.7	0.869
Head_Sec edu	Unmatched	0.079	0.088	-3		0.070*
	Matched	0.08	8217	-1	68	0.606
Head_Voc/tec edu	Unmatched	0.047	4629	0.2		0.891
	Matched	0.047	4434	1.2	-424	0.529
Head_Tertiary	Unmatched	0.047	6154	-6.5		0.000***
	Matched	0.047	5613	-4.1	36.9	0.024**
Central	Unmatched	0.073	10719	-12		0.000***
	Matched	0.073	7496	-0.7	93.9	0.667
Greater Accra	Unmatched	0.069	13832	-23		0.000***
	Matched	0.069	7461	-1.9	91.7	0.230
Volta	Unmatched	0.121	7976	13.8		0.000***
	Matched	0.121	11385	2.3	83	0.244
Eastern	Unmatched	0.131	9537	11.4		0.000***
	Matched	0.131	13708	-1.8	83.8	0.364
Ashanti	Unmatched	0.142	10593	10.9		0.000***
	Matched	0.142	14024	0.4	96.1	0.829
Brong Ahafo	Unmatched	0.105	0.092	4.3		0.008**
	Matched	0.105	10012	1.7	60.2	0.370
Northern	Unmatched	0.098	10349	-2		0.228

Variable	Sample	Treated (mean)	Control (mean)	% Bias	% Bias reduction	P>{t}
Upper east	Matched	0.098	9308	1.5	22.9	0.406
	Unmatched	0.092	0.083	3.3		0.041*
Upper west	Matched	0.093	10311	-3.7	-12.8	0.058*
	Unmatched	0.075	8761	-4.5		0.006**
	Matched	0.075	0.073	1	77.3	0.566

*, ** and *** refers to significance at 10%, 5% and 1% respectively

Appendix 5: Balancing test (Internal remittance)

Variable	Sample	Treated (mean)	Control (mean)	% Bias	% Bias reduction	P>{t}
Household size	Unmatched	3.901	0.362	-17.2		0.000***
	Matched	3.89	0.844	1.7	89.8	0.766
Children below 6yrs	Unmatched	0.526	72706	-22.4		0.000***
	Matched	0.523	47842	5	77.6	0.354
Children from 6-15yrs	Unmatched	0.968	0.184	-16.4		0.000***
	Matched	0.964	91547	3.7	77.5	0.516
Elderly	Unmatched	0.309	21556	17.3		0.000***
	Matched	0.308	30935	-0.3	98.1	0.959
Dependency ratio	Unmatched	11.35	3.292	-11.4		0.015**
	Matched	11.31	11.93	-3.6	68.2	0.550
Males above 15yrs	Unmatched	1.105	0.205	-11		0.011**
	Matched	1.104	0.126	-2.4	78.3	0.704
Rural	Unmatched	0.242	54877	-66		0.000***
	Matched	0.243	25719	-3.1	95.3	0.580
Head_age	Unmatched	46.2	4.103	13.9		0.001**
	Matched	46.15	6.446	-2	85.9	0.752
Head_age2	Unmatched	2380	154.5	14.7		0.000***
	Matched	2375	394.9	-1.3	91.2	0.835
Head_sex	Unmatched	0.37	22277	32.6		0.000***
	Matched	0.369	35252	3.6	89	0.574
Head_Basic edu	Unmatched	0.4	31002	19		0.000***
	Matched	0.401	43885	-7.9	58.2	0.202
Head_Sec edu	Unmatched	0.158	0.088	21.5		0.000***
	Matched	0.158	13849	6.1	71.9	0.354
Head_Voc/tec edu	Unmatched	0.095	4629	19.1		0.000***
	Matched	0.094	8453	3.5	81.6	0.599
Head_Tertiary	Unmatched	0.108	6154	16.6		0.000***
	Matched	0.108	13489	-9.7	41.6	0.169

Variable	Sample	Treated (mean)	Control (mean)	% Bias	% Bias reduction	P>{t}
Central	Unmatched	0.072	10719	-12.4		0.008**
	Matched	0.072	8273	-3.8	69.5	0.501
Greater Accra	Unmatched	0.167	13832	8		0.057*
	Matched	0.167	16007	2	74.9	0.746
Volta	Unmatched	0.057	7976	-8.8		0.056*
	Matched	0.058	5216	2.1	75.8	0.693
Eastern	Unmatched	0.101	9537	1.7		0.686
	Matched	0.101	11151	-3.6	-108	0.559
Ashanti	Unmatched	0.259	10593	40.3		0.000***
	Matched	0.259	25719	0.5	98.8	0.945
Brong Ahafo	Unmatched	0.163	0.092	21.4		0.000***
	Matched	0.162	16367	-0.5	97.5	0.935
Northern	Unmatched	0.011	10349	-40.8		0.000***
	Matched	0.011	899	0.8	98.1	0.762
Upper east	Unmatched	0.02	0.083	-29		0.000***
	Matched	0.02	1799	0.8	97.2	0.826
Upper west	Unmatched	0.016	8761	-32.6		0.000***
	Matched	0.016	1978	-1.6	95	0.652

*, ** and *** refers to significance at 10%, 5% and 1% respectively

Appendix 6: Balancing test (External remittance)

Variable	Sample	Treated (mean)	Control (mean)	% Bias	% Bias reduction	P>{t}
Household size	Unmatched	4.106	0.362	-9.2		0.000***
	Matched	4.109	0.178	-2.5	73	0.230
Children below 6yrs	Unmatched	0.622	72706	-11.5		0.000***
	Matched	0.623	0.631	-0.9	92.3	0.652
Children from 6-15yrs	Unmatched	1.119	0.184	-4.6		0.007**
	Matched	1.12	0.137	-1.1	75.7	0.581
Elderly	Unmatched	0.395	21556	32.4		0.000***
	Matched	0.394	41884	-4.5	86.1	0.048**
Dependency ratio	Unmatched	11.48	3.292	-10.1		0.000***
	Matched	11.49	12.14	-3.6	64.5	0.102
Males above 15yrs	Unmatched	1.037	0.205	-18		0.000***
	Matched	1.038	0.076	-4.1	77.5	0.055*
Rural	Unmatched	0.615	54877	13.6		0.000***
	Matched	0.615	62836	-2.7	79.9	0.170
Head_age	Unmatched	49.28	4.103	31.7		0.000***
	Matched	49.21	9.165	0.3	99	0.892
Head_age2	Unmatched	2754	154.5	35.3		0.000***

Variable	Sample	Treated (mean)	Control (mean)	% Bias	% Bias reduction	P>{ t }
Head_sex	Matched	2744	754.1	-0.6	98.4	0.805
	Unmatched	0.398	22277	38.5		0.000***
Head_Basic edu	Matched	0.397	38242	3.2	91.7	0.142
	Unmatched	0.283	31002	-6		0.001**
Head_Sec edu	Matched	0.283	28092	0.5	91.8	0.805
	Unmatched	0.069	0.088	-7		0.000***
Head_Voc/tec edu	Matched	0.069	7303	-1.5	78.4	0.432
	Unmatched	0.04	4629	-3.1		0.075*
Head_Tertiary	Matched	0.04	3519	2.4	22.1	0.203
	Unmatched	0.038	6154	-10.6		0.000***
Central	Matched	0.038	4292	-2.1	80.7	0.261
	Unmatched	0.074	10719	-11.6		0.000***
Greater Accra	Matched	0.074	8299	-3.1	73.1	0.099*
	Unmatched	0.057	13832	-27.5		0.000***
Volta	Matched	0.058	5533	0.8	97.2	0.631
	Unmatched	0.128	7976	15.8		0.000***
Eastern	Matched	0.127	13568	-2.7	82.6	0.221
	Unmatched	0.135	9537	12.5		0.000***
Ashanti	Matched	0.135	12368	3.6	70.9	0.087*
	Unmatched	0.127	10593	6.6		0.000***
Brong Ahafo	Matched	0.127	11595	3.3	49.7	0.108
	Unmatched	0.095	0.092	0.9		0.579
Northern	Matched	0.095	8686	2.9	-202	0.151
	Unmatched	0.109	10349	1.9		0.271
Upper east	Matched	0.109	11371	-1.4	26.2	0.501
	Unmatched	0.102	0.083	6.5		0.000***
Upper west	Matched	0.102	11574	-4.7	27.8	0.030**
	Unmatched	0.085	8761	-1		0.546
	Matched	0.085	8096	1.4	-32.9	0.487

*, ** and *** refers to significance at 10%, 5% and 1% respectively

Appendix 7: Balancing test (Both remittances)

Variable	Sample	Treated (mean)	Control (mean)	% Bias	% Bias reduction	P>{ t }
Household size	Unmatched	3.803	0.362	-20.1		0.004**
	Matched	3.803	0.971	-6	70	0.532
Children below 6yrs	Unmatched	0.411	72706	-38		0.000***
	Matched	0.411	35407	6.9	81.8	0.389
Children from 6-15yrs	Unmatched	0.971	0.184	-15.4		0.030**
	Matched	0.971	0.057	-6.2	59.5	0.529
Elderly	Unmatched	0.636	21556	64.9		0.000***
	Matched	0.636	65072	-2.2	96.6	0.846
Dependency ratio	Unmatched	10.05	3.292	-19		0.012**
	Matched	10.05	1.349	-7.6	60	0.466
Males above 15yrs	Unmatched	0.943	0.205	-28.4		0.000***
	Matched	0.943	98086	-4.1	85.4	0.681
Rural	Unmatched	0.383	54877	-33.7		0.000***
	Matched	0.383	39234	-1.9	94.2	0.841
Head_age	Unmatched	55.85	4.103	72.4		0.000***
	Matched	55.85	7.297	-8.9	87.7	0.403
Head_age2	Unmatched	3435	154.5	75		0.000***
	Matched	3435	583.3	-8.6	88.5	0.448
Head_sex	Unmatched	0.459	22277	51.5		0.000***
	Matched	0.459	44976	2.1	96	0.845
Head_Basic edu	Unmatched	0.301	31002	-1.9		0.790
	Matched	0.301	32057	-4.1	-122	0.673
Head_Sec edu	Unmatched	0.12	0.088	10.5		0.107
	Matched	0.12	10526	4.7	55	0.643
Head_Voc/tec edu	Unmatched	0.077	4629	12.6		0.040*
	Matched	0.077	3349	17.9	-42.3	0.054*
Head_Tertiary	Unmatched	0.081	6154	7.7		0.239
	Matched	0.081	0.062	7.4	3.4	0.450
Central	Unmatched	0.048	10719	-22.3		0.006**
	Matched	0.048	2871	7.2	67.7	0.309
Greater Accra	Unmatched	0.072	13832	-21.8		0.006**
	Matched	0.072	0.062	3.1	85.6	0.696
Volta	Unmatched	0.139	7976	19		0.002**
	Matched	0.139	12919	3.1	83.8	0.775
Eastern	Unmatched	0.12	9537	7.8		0.238
	Matched	0.12	11005	3.1	60.5	0.760
Ashanti	Unmatched	0.182	10593	21.7		0.000***
	Matched	0.182	21531	-9.6	55.9	0.392
Brong Ahafo	Unmatched	0.187	0.092	27.4		0.000***
	Matched	0.187	17703	2.8	89.9	0.800

Variable	Sample	Treated (mean)	Control (mean)	% Bias	% Bias reduction	P>{t}
Northern	Unmatched	0.053	10349	-19		0.016**
	Matched	0.053	7177	-7.2	62.4	0.419
Upper east	Unmatched	0.062	0.083	-8		0.277
	Matched	0.062	7656	-5.5	31.3	0.565
Upper west	Unmatched	0.01	8761	-36.9		0.000***
	Matched	0.01	1435	-2.3	93.9	0.654

*, ** and *** refers to significance at 10%, 5% and 1% respectively

Appendix 8a: Rosenbaum bounding sensitivity analysis

(Total, internal, external remittance)

Outcome Variables	Critical P-values (upper bounds significance level) of outcome variables at different critical values of gama									
	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	
Food	0	0	0	0	0	0	0	0	0	0
Consumer Durables	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0
Health	0	0	0	0	0	0	0	0	0	0
Housing	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0

gamma - log odds of differential assignment due to unobserved factors. Sensitivity analysis for checking the robustness of estimated ATT using Rosenbaum bounds

Appendix 8a: Rosenbaum bounding sensitivity analysis (Both remittance)

Outcome Variables	Critical P-values (upper bounds significance level) of outcome variables at different critical values of gama									
	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	
Food	0	0	0	0	0	0	1.1E-15	2E-14	2.3E-13	
Consumer Durables	0	0	0	0	0	0	1.1E-15	2E-14	2.3E-13	
Education	0	0	0	0	2E-15	6.7E-14	1.1E-12	1.1E-11	7.2E-11	
Health	0	0	0	8.9E-16	5.2E-14	1.2E-12	1.5E-11	1.1E-10	6.3E-10	
Housing	0	0	0	0	0	1.1E-16	3.1E-15	5.2E-14	5.4E-13	
Others	0	0	0	0	0	0	1.2E-15	2.2E-14	2.5E-13	

gamma - log odds of differential assignment due to unobserved factors. Sensitivity analysis for checking the robustness of estimated ATT using Rosenbaum bounds