International Remittances Flow to Nigeria: A Household Perspective

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This thesis is submitted in fulfilment for the award of the degree of

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Copyright Statement

Dedication

I dedicate this thesis to my family members especially to the memory of my late brother Samuel A. Otame, who encouraged me never to give up. I especially appreciate my wife, Ufuoma, whose encouragement on many fronts pushed me to the finish line. My children, Eloho, Efekome and Oghenemaro, are exceptional: They had to endure some rationing to enable me to complete. They are the best anyone could wish to have as children.

Declaration

I declare that I wrote this thesis wholly on my own and that it has not previously been presented, in whole or in part, by any other candidate for a degree or other qualifications. Unless otherwise noted by reference or credit, the work provided is entirely mine. The pronouns we/ our I have used throughout this thesis are for stylistic reasons.

Lucky Otame

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Abstract

Due to a shortage of funds, most Nigerian households cannot support essential welfare-enhancing undertakings such as engaging in non-farm income-generating ventures and coping with consumption after experiencing negative shocks. The difficulties encountered by households in accessing the internet aggravate the situation. Extant research shows that foreign remittances can finance families in developing countries to fund welfare needs. Even though remittance flows to the region peaked at around $25 billion in 2018, people struggle to finance household activities. In the absence of a consensus, researchers are putting greater effort into figuring out how remittances affect family welfare. Therefore, by examining the connection between remittances and household well-being, this thesis hopes to add to the rising research effort on establishing the actual link between remittances and family well-being.

The 2015/2016 and 2018/2019 General Household Survey (GHS) data for Nigeria sourced from the World Bank is used to examine the central concerns of this study. Specifically, the research addresses: (1) Determining the threshold at which remittances become a substantial source of funding for household enterprises. (2) Classifying households according to the severity of shocks they have experienced and determining the effect of remittances on their ability to cope with post-shock consumption, and (3) Evaluating the direct link between remittances and households utilising the internet.

We reviewed previous methodological approaches to analysing the link between foreign remittances and households' well-being and then constructed a model for each central issue in this study. While we used the Quantile Regression (QR) to examine the influence of remittances on the financial capital of households' businesses, we used the log-log non-linear regression technique to explore the benefits of remittances on the post-shock consumption coping of families. Before applying the method, households were categorised into two groups to determine whether there was a difference-in-means of the groups based on the severity of the shocks they had suffered.

Findings were mixed and show that remittances are only effective as a source of capital for households' enterprises when their capital requirements are less than the median value; otherwise, they are insignificant. The finding implies that remittance receipts by households are insufficient to influence financial capital beyond the median level. In the post-shock coping consumption analysis, domestic remittances are more beneficial for all homes than foreign remittances. We equally found that post-shock coping mechanisms vary based on specific household characteristics such as size. On the effect of remittances on the ability of households to connect to and utilise the internet for activities such as e-trading and other internet-enabled transactions, foreign receipts of remittances have a positive but mild influence. However, results suggest that the ability of rural households to access and use the internet is worse by as much as 40% compared to their urban counterparts.

This study therefore provides evidence that: (1) The effectiveness of remittances depends on their size and not in all cases for the financial capital central concern. (2) The impact of remittances has a positive impact on the post-shock consumption of households but not as much as domestic remittances. The extent of remittances' impact on households depends on the type of shock suffered. Hence, unless interventions reduce the occurrence of the incidences of shocks, remittances might not be effective in all cases. (3) Remittances positively affect households' ability to utilise the internet, though dependent on the level of digital infrastructure. There is, therefore, the need for further investigation on the subject.

Key Words: Consumption smoothening, financial capital, households, internet access, shocks, development, welfare.

Table of Content

List of Figures

NO TABLE OF FIGURES ENTRIES FOUND.

List of Tables

No table of figures entries found.

CHAPTER 1. INTRODUCTION

1.1 Background to the Study

Global remittances flows have been increasing in the past decades and the proportion of flows to Low and Middle-Income-Countries (LMICs) such as Nigeria has also been on the increase. The World-Bank (2019) reports that remittances has outpaced total development assistance and are significantly more extensive than cyclical private lending and equity flows in recent years. According to the Bank, LMICs received remittances worth $526 billion in 2018, up from $307 billion in 2009 and reached about $551 in 2019. Total global remittances in the corresponding period increased to $682 billion in 2018, up from $432 billion in 2009. This trend suggests that the value of remittances to LMICs accounted for more than 70% (526/682*100) of total global remittances flows in 2018 alone. Compared to other flows such as FDI, which totalled $344b in 2018, remittances are the largest source of foreign exchange earnings in the LMICs and provide a source of finance to households (Ajaero et al. 2018; Vacaflores 2018; Opiyo 2021).

The value of remittance flows to Sub-Saharan Africa (SSA), according to Ratha (2021), was recorded to be $48 billion in 2018, with Nigeria accounting for more than half of total receipts. The worth of remittances also constitutes roughly 5.7 per cent of her GDP, down from 6.1 per cent in 2018. According to the World Bank (2019), more remarkable economic growth in advanced nations and higher oil prices helping regional economies were among the reasons that contributed to the increase in remittances to Sub Sahara Africa (SSA). As of 2017, the SSA area was home to numerous nations whose remittances account for a considerable portion of gross domestic product, notably Liberia (27%), Gambia (21%), and Cameroun (21%). Remittances to the region surged from $30 billion in 2010 to around $48 billion in 2018. Nigeria ($25.08 billion), Ghana ($3.8 billion), and Senegal ($2.69 billion) were among the region's top recipients at the end of 2018 (Ajaero *et al*. 2018; Ojapinwa 2021). Remittances has thus become a force in the economic and development affairs of most remittance-receiving low- and medium-income countries.

Many scholars, including Nagarajan (2009), Amponsah and Garcia-Fuentes (2016), Munyegera and Matsumoto (2016), Akanle and Adesina (2017) and others, believe

that the flow of remittances is critical for national development. They also feel that remittances improve the well-being of households in the region. On the other hand, some researchers discovered contradictory evidence on the effects of remittances in developing countries and on the welfare of households. For instance, Murakami *et al*. (2021) demonstrate that remittances have a higher negative impact than migration, emphasising that remittances might lower labour supply in recipient nations because they could act as an incentive for people not to work. Those in this school of thought also argues that the increasing level of remittances flow to Nigeria does not reflect a significant impact on the poverty structure in the country.

The trend of remittance and other capital flows to Nigeria is depicted in Fig. 1.1. where the flow of remittances into Nigeria remained consistent from 1977 to 1992. In 1997, remittances rose to $1.9 billion, up from $793 million in 1993 and $56 million in 1992. During the same period, net Official Development Assistants (ODA) reached $255 million in 1997, $391 million in 1993, and $325 million in 1994. This trend continued until 2018, when remittances amounted to over $25 billion. In comparison, foreign aid that encourages and expressly targets the economic development and welfare of developing nations, also known as Official Development Assistance (ODA), peaked in 2006 with a value of $11.2 billion and plummeted to about $1.8 billion the following year. Similarly, FDI flows peaked in 1994 and fell due to cyclical fluctuation, while remittances continued to rise (Levy Yeyati *et al*. 2007; Gómez-Zaldívar *et al*. 2021).

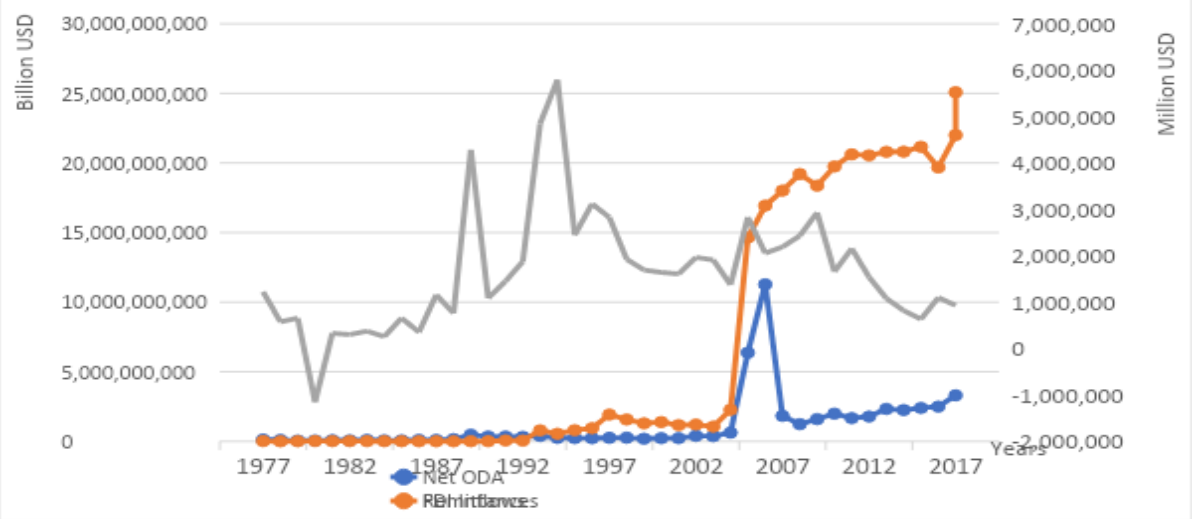


Figure 1.1 Flow of Remittances, ODA and FDI to Nigeria 1977 - 2018

Previous literature on the subject shows that remittance flows could boost households and firms' access to finance for various economic activities, such as providing capital for enterprises and consumption (Millanzi 2019; Mariska *et al.* 2021). Other aspects include coping with adverse economic shocks that have become common among households in many developing countries (Omar Mahmoud 2010; de Janvry *et al.* 2016; Diwakar and Lacroix 2021) and health care and other family welfare-enhancing activities, according to Castree (2016). In other words, given the difficulties households face locally in accessing finance from commercial and microfinance Banks and government support, and the level of inequitable income distribution as shown, remittances from abroad are expected to provide families with the much-needed finance to improve their well-being. Another good reason why people favour remittances for funding according to Ratha (2013) is that while capital flows tend to rise during favourable economic cycles and fall in tough times, remittances react less violently and show remarkable stability over time. The study notes further that, remittances augment the recipient individuals' incomes and increase the recipient Country's foreign exchange reserves. It also stressed that investing remittances contribute to output growth, and if consumed, they also generate positive multiplier effects.

However, the increasing inflows to the region have not made finance available to households, as demonstrated in the literature. Instead, the lack of access to finance seems to have worsened. This situation aligns with Le Thanh (2018) findings that remittance inflows could adversely influence recipient countries because most recipients are still living in poverty and unable to fund non-farm income-generating activities to escape poverty, among other issues. The country's frequent socioeconomic shocks worsen the situation (Lukman Oyeyinka and Olomola 2016; Idris *et al.* 2021). These persisting problems have led to unanswered questions regarding the implied impact of remittances on households' finance and welfare shown in the literature, thus creating a gap. This gap in the literature needs to be filled, considering country-specific factors. Filling this gap will evaluate the true impact of remittances at the household level in a developing country such as Nigeria.

According to Adams (2011) and Ambrosius and Cuecuecha (2016), many people's faith in remittances as a source of finance stems from the belief that remittances can

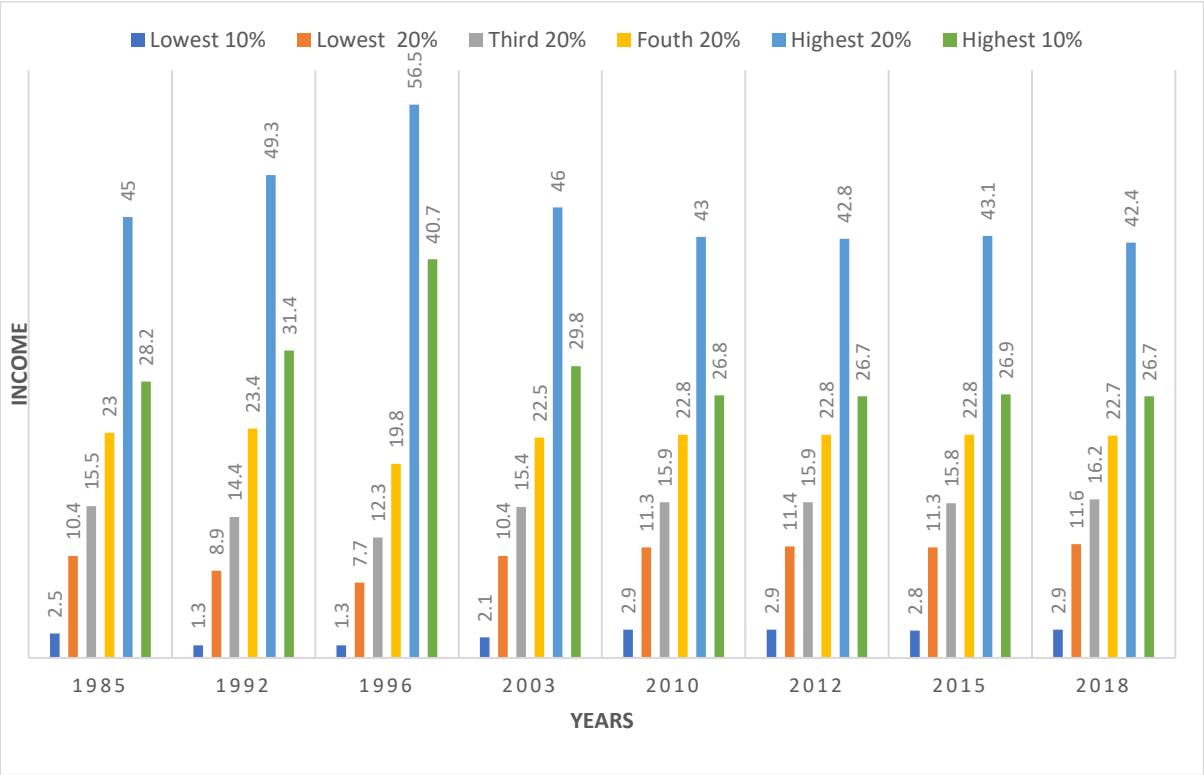
improve the welfare of households in migrants' sending countries. They stressed that remittances could boost community development and, as a result, extends to positively impact a receiving country's national development. Given this belief and the perceived benefits from remittances, Khramova *et al.* (2020) stressed that many families in developing countries strive to send at least one member abroad to receive later remittances. The works of Raihan *et al*. (2009) and Andersson (2012) support this claim. Other examples of this view include (Neumayer 2005; Acosta *et al*. 2007; Ambrosius and Cuecuecha 2013; Akanle and Adesina 2017). The importance of remittances to developing nations discussed by Chowdhury (2011) points out that many countries are very reliant on remittances, putting them in competition with other countries in terms of sending people to work overseas.

Many factors contribute to households' desire to send family members to developed nations in poorer countries with the aim to remittances. It is partly due to the numerous barriers people confront in obtaining financing to maintain or improve their well-being. Lack of collateral, poor credit profiles and poverty are barriers (Mbanaso and Emerole 2021; Seema et al. 2021). According to Itohan *et al.* (2021), inadequate government social support systems, or in many cases, a complete lack of it, exacerbates the problem. Meseguer *et al*. (2017) state that a lack of finance makes many already poor households fall deeper into poverty, while others who are yet to fall into it could do so.

Another excellent reason why households rely on remittances as a key source of funding is unequal income distribution. For instance, the World Bank (2019) based on primary household survey data from government statistical agencies and World Bank country departments estimates that the lowest 10^{th}% share of income in Nigeria was worth 2.9 in 2018, compared to the highest 20^{th}% of 42.40 and highest 10^{th}% of 26.7 which indicates a huge disparity among income earners.

Reading off from table 1.1 below, shows a trend that have persisted for many decades against poor households in the Country. For instance, the value that accrues to the lowest 10^{th} percentile had remained largely consistent since 1985 is 2.5. This value fell to 1.3 in 1992 and remained so four years after (1996). Although the 10^{th} percentile rose from 1.3 to 2.1 in 2003, and 2.9 in 2010, it has remained so up to 2018 save for 2015 when it decreased marginally to 2.8.

Table 1.1 Percentile Income Distribution in Nigeria 1985 - 2018



Source: Researcher's Computation Using Data from the World Bank 2019

A look at the highest threshold of 10%, indicates that it constitutes 28.2% of all income in 1985 and reached its peak of 40.7 % in 1996 while the 20th highest income class constitutes 56.5 in the same year down from 45 in 1985. This means that in 1996, about 80% of the population shared about 43% (100 - 56.5) of all income with the bottom income bracket of 10% experience its lowest downturn of 1.3 compared to the highest 10% (28.2) in the distribution. This trend continued across the years up to 2018. Poorer families are thus the worst hit and thus, more financially disadvantaged, unable to appropriately finance their consumption, establish or operate enterprises, or even cope with severe social and economic shocks for lack of finance.

A lack of finance lowers households' well-being and makes it extremely sensitive to economic and social risk and unpredictability (Kochaniak 2018). Without finance to perform family-enhancing activities, households suffer financial exclusion (Claire 1999; Gosztonyi and Havran 2021)**.** They cannot finance their consumption, set up or operate businesses or even cope with adverse social and economic shocks when they occur with grave consequences on family wealth and food consumption (Deuchert and

Felfe 2013; Idowu-Daniel and Olanrewaju 2019). Due to the difficulty in obtaining financing, households are pushed into migration and rely on self-help and informal sources to improve their situation, including depending on remittances receipts from abroad. These reasons make researchers attach so much importance to the study of remittances and the welfare of households on the one hand and how it affects the development of receiving nations**.** Most of these studies affirm that remittances are essential in providing home finance, thus increasing their welfare and national development through complementary policy (Brown 2006).

Proponents of remittances for households' finance believe that they can increase the welfare of remittance-receiving families while also stimulating the economy for growth and progress in their respective countries (Kujtim and Qëndrim 2018; Mishra et al. 2022). According to Ajefu and Ogebe (2019), receiving remittances improves the likelihood of using formal financial services like deposit accounts and Internet/mobile banking, which is another excellent illustration of the impact of remittances as a source of financial capital for households. The study also suggests lowering fees and comparable barriers to remittance inflows into the country and, consequently, use of formal financial services in Nigeria, which can result in an increase in investment capital and the economic growth of the nation. The study by (Adarkwa 2015) on the impact of remittances on the economic growth of selected West African countries, Cameroon, Cape Verde, Nigeria, and Senegal, found that the inflow of remittances to Senegal and Nigeria has a positive effect on these countries' gross domestic product which can help support investment finance while it had a negative effect for Cape Verde and Cameroon. The study confirms that Nigeria gained the most from remittances throughout the period, while Cameroon received the least.

Other studies that support remittances as the lifeline for household finance, such as Stark (1988), Terrelonge (2014), Ratha (2020) and Shcrieder (2000), corroborates that remittances are an essential source of improving households' welfare and recipient nations' development. Specifically, Terrelonge found remittances to reduce infant mortality through improved living standards by relaxing households' budget constraints. Several other reports on the positive side of the topic conclude that remittances may serve as a social security mechanism for smallholder households by providing finance for businesses, deepening financial growth Fromentin (2017), and

increasing household productivity (Djido and Shiferaw 2018). According to the World-Bank (2016), the expectations are that remittance inflows to households can help mitigate family poverty by investing in new businesses to compensate for workforce loss in developing countries because of emigration and assist them in coping with adverse economic shock*s.*

In terms of coping with consumption after negative shock experiences, international remittances have been found in several empirical studies, including one by Jammeh (2020), which empirically investigated if the existence of remittances shifts the extent of a household's consumption smoothing and discovered, among other findings, that remittances explain approximately 11 per cent of consumption smoothing against unexpected events. Similar to (Jammeh 2020) analysis, Idowu-Daniel and Olanrewaju (2019) identified that the high prevalence of poverty among Nigerian households and the country's scant social safety nets make it more vulnerable to health shocks, which, per the study, have negative economic repercussions by increasing medical costs and lowering household consumption. To balance out spending, the report affirms that households retaliate by using informal coping mechanisms like relying on personal remittance receipts. Alem and Andersson (2019) demonstrate that although getting domestic remittances has no impact, obtaining international remittances raises the value of private domestic interhousehold transfers. The study's findings demonstrate the trickle-down effects of foreign remittances on household outcomes in recipient countries by showing that sent transfers significantly respond to shocks.

The third strand of this study’s analysis is on the effect remittances has on households’ access to the internet. Accessing the internet by households in developing countries has been one peculiar problem by poor households: Accessing the internet entails a combination of assets such as mobile phones, laptops and other internet-accessible devices backed by a strong digital grid. Lack of adequate or insufficiency of access has been identified by researchers among poor households and other developing countries. For example, to investigate their views and experiences of Internet access and computer use regarding the accessibility of technological products and services, Tayo *et al.* (2016), enlisted twenty members of a community in Ido Local Government Area of Oyo state and Yewa Local Government Area of Ogun state in Nigeria. The survey that was used to gather the data focused on the reasonable cost of computer

equipment and Internet connection, exposure to online content, expanding access to the internet, instruction in the use of computers, advantages for job search, and networking. Twenty residents of the low-income neighbourhood take part in the study. The findings showed that factors contributing to the digital divide included a lack of Internet access, the cost of computers and Internet use, poverty, a lack of computer literacy, and inadequate infrastructure. The effects of mobile phone use on household welfare and women's empowerment in Bangladesh were evaluated by Hossain and Samad (2020) using household survey data from rural Bangladesh's off-grid areas. According to the study, having a mobile phone boosts women's empowerment, raises household income from various sources, such as small companies and remittances, by 3 to 10%, and makes it easier to balance out consumption during shocks.

On the contrary, there is conflicting data in studying foreign remittances and those who have opposite views consider that remittances might compromise their goal of boosting household welfare. For example, Jessica and Richard (2016) show that international migration and remittances reduce household labour supply and participation. Murakami *et al*. (2021) also find that the negative impact of remittances is more significant than that of migration. The study finds that remittances reduce the employment rate of non-migrants by 10.2 percentage points in the focus study. The survey by Kakhkharov *et al.* (2021) finds that remittances adversely affect healthcare expenditures and are insignificant to education in developing countries. Khramova *et al.* (2020) find that the negative impact of remittances includes creating new and high-technology jobs is slow, insufficient, and lagging population growth. Thus, the debate on the actual impact of remittances on the welfare of households and on development rages on.

Abdulrazzaq (2019) supports the view that a remittance-receiving country becomes hostage to external market conditions because of the demand for foreign labour and crisis phenomena in the receiving countries. The importance and contribution of remittances toward the welfare of households in developing countries thus requires additional research. There is, therefore, a significant lack of consensus due to this debate.

The existence of enormous controversy over the impact of remittances on receiving countries has remained unresolved and ambiguous. Thus, ambiguity exists because many recipient developing countries still struggle to access finance. The International Organization for Migration report (IOM 2015), while referring to the case of Moldova, states that developing countries continue to be concerned about the impact of remittances on the welfare of households. In addition to a lack of money, households experience shocks and cannot access and use the internet to their full potential. These issues need to be resolved because they have lasted for so long. This study focuses on how remittances affect three critical aspects of household welfare: a) the financial capital of households' non-farm income-generating activities; b) the effects of remittances on households' post-shock consumption; and c) the role of remittances in enabling households to access and use the internet. Empirical evidence also suggests that a study on the impact of remittances on household financial resources, internet access, and coping with post-shock consumption needs further pursuing. Previous analyses' methodologies employed in their studies, the problem of restricted data access, and prior works' failure to adequately recognise and account for important country-specific and household characteristics limit their studies. Thus, this study becomes necessary to contribute to the growing body of information on the topic.

1.2. International Migration and Remittances

Discussing remittances and their effects on households is difficult without mentioning migration in receiving and sending countries. Studies such as Jessica and Richard (2016) have shown that it is often impossible to disentangle the effects of migration and remittances. de Haas (2007a) concluded that when it comes to the impact of remittances on education in origin countries, findings indicate that migration and remittance inflows can positively add value to local human capital and ensure higher school attendance and educational achievement. Lubambu (2014) believes that, without a doubt, the relationship between remittances and development remains complex, particularly in terms of human mobility, which contributes to the spread of global interdependence at all levels: Be it social, economic, or political, remittances have remained stable during and after the global economic downturn, being a significant source of income for families and playing a critical role of co-insurance or risk mitigation in times of adversity.

Authors like Levitt (1998) and Edward LiPuma (2012) believe that migration drives cultural diffusion and social change forms. The study posits that social remittances are "the ideas, behaviours, identities, and social capital flowing from migrants" in destination countries to their home communities. Bharat (2014) examined people's behaviour over managing remittances receipts for 77 households in Nepal and found that the people are less motivated to establish a new business from remittances they received. He concludes that remittance is not a solid base to increase entrepreneurial activities among recipients.

Contrary to Bharat's finding, Marchand (2013) did a background study on the effects of remittances on the entrepreneurial activities of migrants. The study discovered that remittance transfers, among other things, are crucial in boosting immigrants' business, community, family life, and political union. The study was a preview of the Maastricht debate on remittances, entrepreneurship, and development. The survey by Taiwo and Sylvanus (2013) is also of interest. The Dutch Ministry of Foreign Affairs-funded IS Academy on Migration and Development convened the discussion on immigrant entrepreneurship. There are complexities regarding the source of remittance sending and receipts by households.

Therefore, the argument on the link between emigration and remittance receipts by families in origin countries has continued to rage. However, as mentioned above by Marchand et al., the findings demonstrate a relationship between migration and remittance-receiving countries, at least in entrepreneurship. Compared to other types of foreign capital flow, such as FDI, emigration from an origin country may be the compelling reason why remittances flow into that country. Lack of clarity in theories could be due to the complexities and areas covered by international migration. Still, they help provide theoretical guidance to understand people's movements in a broader context (Wickramasinghe and Wijitapure 2016).

The table below depicts the trend of remittance flows to LMIC (Low- and Medium-Income Countries) for two decades as given by the (World-Bank 2017)

Table 1. 2 Estimates and Projections of Remittances Flows to LMI

Years	2010	2014	2015	2016	2017p	2018p	2019f
	$billions						
Low and Middle Income	341	444	440	429	466	485	503
East Asia and Pacific	96	121	126	123	130	135	140
Europe and Central Asia	38	52	41	40	48	51	53
Lat. America and Caribbean	75	65	68	74	80	83	87
Middle East and North Africa	39	54	51	49	53	56	57
South Asia	82	116	118	110	117	120	123
Sub-Sahara Africa	30	37	36	34	38	41	43
World	468	436	582	573	613	462	667
Memo Item: Dev. Countries (FY 2016 income classification) *	335	436	432	422	457	475	493
	Growth Rate, Percent						
Low and Middle Income	11.2	3.8	-1	-2.4	8.5	4.1	3.7
East Asia and Pacific	19.4	4.9	3.9	-2.6	5.8	3.8	3.6
Europe and Central Asia	4.9	-5.2	-22	-2.4	20.9	6	4.8
Lat. America and Caribbean	2.6	4.9	6.1	7.5	8.7	4.3	4.2
Middle East and North Africa	18.6	7.2	-5.3	-4.8	9.3	4.4	3.3
South Asia	9.4	4.5	1.5	-6.1	5.8	2.5	2.6
Sub-Sahara Africa	9.7	5	-2.5	-4.6	11.4	7	5.6
World	8.4	3.7	-2.6	-1.5	7	4.6	3.9

Source: *World Bank, 2017. P = Provisional, f = forecast*

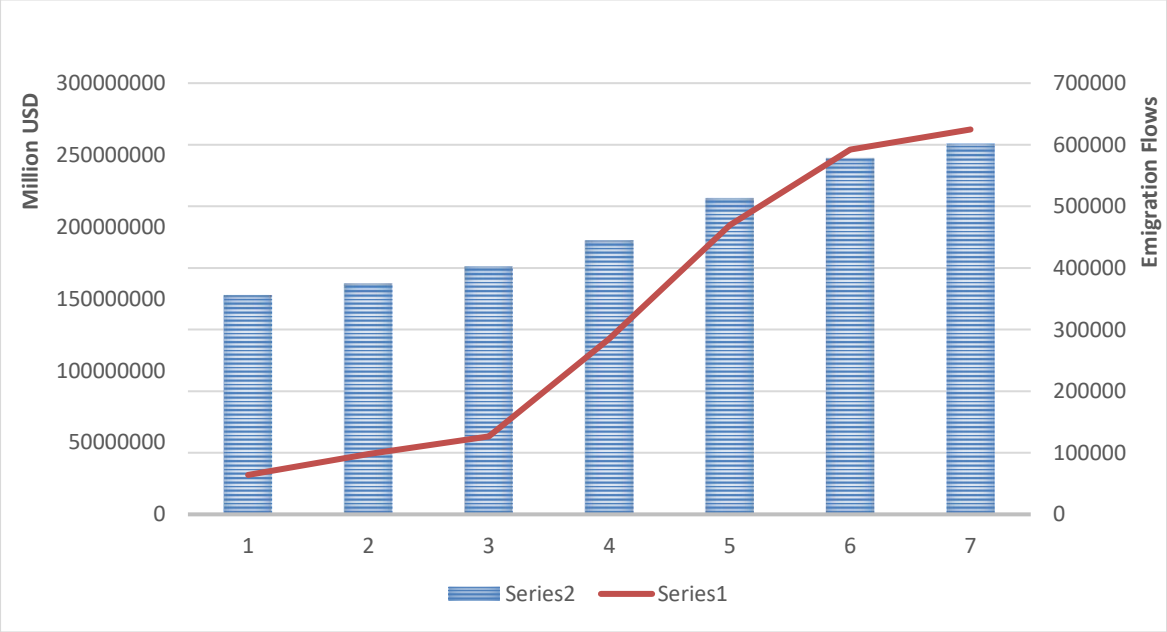
While it is difficult to establish a cause-and-effect relationship due to the complexities of migration, as shown above, there is some evidence of a positive trend between the two widely debated concepts of migration and remittances (Stark 1988; Gupta *et al*. 2007; Asongu 2013).

We identify some factors as likely reasons for the increase in remittances to Nigeria. The World Bank (2019) finds that higher growth in the United States and a rebound in remittances outflows from some Gulf Cooperation Council (GCC) Countries and the Russian Federation triggered remittances. In addition, the (International Organization

for Migration (IOM), 2009) establishes that although Nigeria is an important destination for migrants within the SSA region, more people emigrate from than migrate to Nigeria. The report states that most Nigerian nationals living outside Nigeria reside in the United Kingdom, the USA, or Sudan. In addition, there has been a significant growth in Nigerians emigrating for educational and work purposes. Even though data on emigrants' skill levels is complex, there are still indicators that the very talented have an exceptionally high tendency to emigrate. According to IOM estimates, in 2000, 10.7 per cent of the highly skilled population trained in Nigeria worked abroad, mainly in Organisation for Economic Co-operation and Development (OECD) countries.

There is a positive correlation between remittances inflows and the stock of the growing Nigerians in the diaspora through emigration. The Nigerian immigrant population in the United States and Europe is highly skilled at 83 per cent and 46 per cent, respectively. Typically, 64% of Nigerian emigrants have completed secondary education Rapoport and Docquier (2006), 14% of Nigerian doctors work abroad in the medical profession, while 90% of nurses who work overseas live and work in the United States and the United Kingdom (Clemens and Pettersson 2008). Many Nigerians appear to work in the health sector (21%) in OECD countries, followed by the real estate and wholesale sectors (12%). For a visual representation of the country's emigration trend, see fig. 1.2 below.

Fig. 1. 2 Trend in Nigeria Emigration and Remittances Flows



Source: Authors Computation using Data from the World Bank and IOM

The emigrated Nigerians work and send personal remittances back home to family members left behind, partly accounting for the increasing remittances flow to the country. Aside from the statistical trend mentioned above, factors embedded in established migration theories, such as the Push-Pull and the altruism theories, lend insights to the development. For example, Ravenstein's push-pull theory regards migration as an inseparable part of development. Proponents of the theory believe that the primary drivers of migration were economic. In its quarterly release in August 2020, the UK Office for National Statistics reports that approximately 715,000 people migrated to the UK. According to the service, non-EU nationals arriving in the UK drive net migration for study purposes. Of those arriving in the UK, 257,000 came for formal study, while 458,000 came for work, family, or other reasons.

The situation in Nigeria is an example of the "push-pull" process, in which people migrate to locations with better conditions because of unfavourable conditions elsewhere (such as oppressive laws, unemployment, high inflation, high taxes, a lack of social services, violence, general insecurity, etc.). The number of people emigrating from Nigeria points to the country's unemployment rate and economic hardship forcing people to relocate. When they do, they send remittances to family members left behind. The world-systems theory, fully developed by Wallerstein (1974), links the determinants of migration to structural changes in world markets and views migration as a function of globalization, increased interdependence of economies, and the emergence of new forms of production, a variant of the Push-Pull model. They considered international migration to be a by-product of global capitalism. It contends that contemporary international migration patterns tend to be from the periphery (poor nations) to the core (rich countries) because factors associated with industrial development in the first world generated structural economic problems and thus pushed elements in the third world (Sorinel 2010).

1.3. Statement of the Problem

Remittances have been shown in the literature to provide financial resources for households, mainly when local sources are unavailable or insufficient in supplying the required finance. The threshold or degree to which remittances add to business finance or financial capital is debatable because this is not sufficiently available in the literature, and households still lack capital for their non-farm income generating

activities (businesses). Parametric analyses have only established the capital volume at which remittances may effectively provide capital for household-owned businesses at the mean level.

Second, numerous studies have found that foreign remittances are a valuable source of coping with post-shock consumption by households after suffering shocks. Suppose we classify households in terms of the severity of shocks they suffered. In that case, there's no adequate proof in the literature to show that remittances would remain effective as a coping source of post-shock consumption for all households. Families are categorised in this manner in this study and determine if remittances connect with each class differently.

Third, the internet has altered the conventional ways of doing things Worldwide. The ways people communicate and do business have changed dramatically, both socially and economically: from social networking to e-commerce; e-payments; e-transfers; e-businesses, and so on - There appears to be enough for everybody but not enough for everyone. Many households remain excluded due to the cost of access, social conflicts, low internet infrastructure, and geographical locations, thus limiting internet-enabled welfare activities for homes. So far, no clear evidence has been found in previous research to suggest what role foreign remittances play in filling this gap for families in a developing country such as Nigeria.

The above factors have increased the brain drain from the region and hurt national productivity and the welfare of households. This trend has made many families vulnerable to attacks in the society. Homes, therefore, find it challenging to fund consumption. As a result, families suffer in such areas as inadequate food intake, coping with economic and social shocks and even accessing the internet. As discussed above, these factors have equally led to more people emigrating from the country. As evidenced by the World Bank data, it is believed that emigration has similarly led to more remittances sent to Nigeria due to the increasing number of people emigrating from Nigeria, which appears to correlate positively with remittances inflow into the country.

With increased remittances to the region, it is expected that obtaining finance or capital for business or coping with consumption due to shocks such as displacement and destruction of farmlands (which have become increasingly common in recent years) will become much easier for households. Instead, despite the increasing remittance flows to Nigeria, start-up and working capital for businesses are challenging, and household poverty and unemployment have continued unabated. For instance, Nigeria's national poverty headcount ratio was 48.4 in 2003 but reduced to 46.0 six years later in 2009 (World-Bank 2016; Psacharopoulos and Patrinos 2018). The downward trend means that in 2003, more than 48 Percent of the population was below the national poverty line, with a marginal drop to 46 Percent six years later in 2009. Furthermore, Gross Capital Formation (GCF), which represents additions to a country's productive resources (capital stock, such as equipment, etc.) generated by household savings and investments, decreased from 27.1 in 2004 to 15.5 in 2015. (i.e., 11 years after). Nonetheless, remittance receipts have continued to rise. The identified problems call for an investigation to determine the impact of the enormous remittance flows to Nigeria on the three critical household areas stated in this study's objectives.

1.4 Aim and Objectives.

This study focuses on how remittances provide finance to households, given their difficulties in accessing finance locally. It examines the role remittances play in three aspects of the welfare of homes in the analysis:

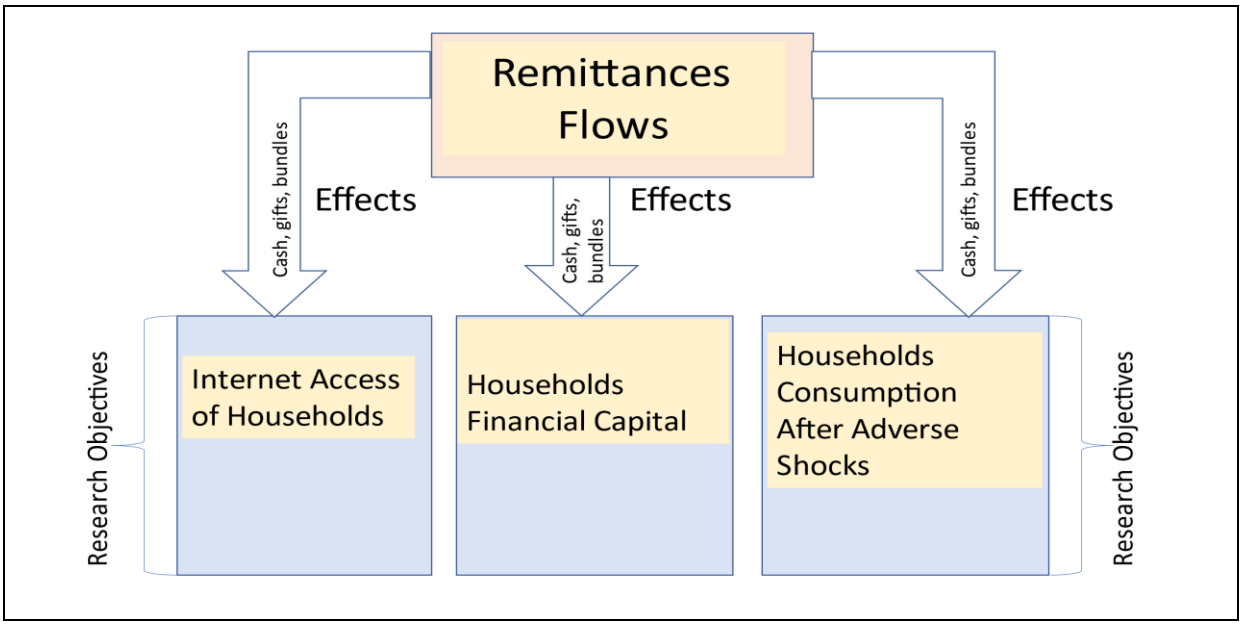
1) The threshold of financial capital at which international remittances relates to the non-farm Income Generating Activities (IGA) of households.

2) Categorizing households in terms of the severity of shocks they suffered to determine the effects of remittances on the post-shock consumption smoothening of households that experienced adverse shocks, and

3). To examine how remittances help households to connect to and use the internet for home welfare-enhancing activities.

I have conceptualized the objectives in a framework in fig. 1.3 below.

Fig. 1. 1 Conceptual Framework



Source: Author's Conceptualisation

Figure 1.3 shows a flow diagram that depicts the research objectives. We have expanded this to account for sub-specific aims in the relevant analytical chapters.

1.5 Research Questions

The following research questions, derived from the objectives, will be explored in this analysis to seek answers to the goals mentioned in 1.3 above.

i. At what threshold of financial capital can remittances effectively provide funding for households-owned businesses?

ii. Do remittances have the same relation on post-shock consumption smoothing strategies for households that experienced more catastrophic shock events as they do for households that experienced less devastating shock events?

iii. How does the receipt of foreign remittances affects the ability of households to access and use the Internet for welfare-improving activities?

1.6 Expected Contribution

It is hoped that this study will contribute to the pool of available information on the subject by determining the quantum or threshold of foreign at which remittances can effectively provide financial capital for household-owned businesses, as shown by the first research query. Secondly, it is believed the study will also contribute to the debate on the effect of remittances and household welfare by categorising households using

remittances as post-shock consumption strategies in terms of the severity of shocks they suffered and by considering country-specific features. Categorising households in terms of severity will enable determining whether the post-shock consumption coping effects using remittances are the same for both groups and for all families. Finally, considering the role of the internet in modern-day life, the ability of households to connect to and use the internet for welfare-enhancing activities through international remittances and other outlets will be evaluated.

Analysing the role of remittances and internet utilisation by families is particularly important because extant literature on the subject is limited. By carrying out the internet-related analysis, it is hoped that policy options on how best to channel remittance-related foreign transfers to enhance the welfare of households will be proffered. Expected the study would also contribute by accessing relevant data, which has frequently been mentioned as a limitation on the topic by several reports. The recently released 2015/2016 and 2018/2019 General Household Survey (GHS) data for Nigeria, a country-wide representative, is sourced from the World Bank and employed in the analysis to overcome this limiting factor. This data source will make the analysis overcome the problem of data unavailability and make it more inclusive. With these datasets, the focus of this investigation extends to include the six geographical zones that comprise the region, unlike previous studies, which for example, concentrated on one community, a local government or one state. Covering the entire geopolitical zones makes it more representative and its findings more valid than previous studies on Nigeria.

Therefore, it hoped to add to the existing literature from the research findings by proposing or devising alternatives to existing policies on implementing foreign remittances receipts among households to maximise their benefits better. Therefore, the study's results may concern the Nigerian state or government and other LMICs facing similar issues since they may provide policy guidance for policymakers who want to incorporate findings in addressing problems common to their countries.

1.7 How the Remaining Parts of this Thesis are Organised.

This remaining part of this thesis have been organized as follows. The second chapter reviews the theoretical and empirical literature on the subject, while the third chapter

discusses data, variable constructs and evaluates methodological concerns in previous studies as well as the methodologies adopted for the study. Chapters 4, 5, and 6 addresses one each of the study's questions developed for this report and attempts to answer one research question. Chapter four investigates the effect of remittances on household financial capital considering the various sources of financial capital open to households, while the fifth chapter examines the connection between remittances and the post-shock consumption expenditure of households based on the severity of shock. Chapter 6 investigates the role of remittances in household internet access and use for household enhancing activities. Chapter 7 concludes the study with a discussion of the results, policy implications and offers some recommendations and the need for further research.

CHAPTER 2. LITERATURE REVIEW

2.1. Introduction

The relevant research on how remittances affect households' welfare in developing countries and how it connects to various aspects of migration is covered in this chapter. It also looks at the ways that remittances are sent through. It begins by clarifying what remittances are and how they serve the interests of families. The review of theories pertinent to the investigation of remittances and household welfare in section 2.2 is next explored. Following this, section 2.3 discusses several studies on remittances and development. Next, sections 2.4, 2.5, and 2.6, respectively, examine the connections between remittances and financial capital, consumption smoothing, and household internet access and usage. Section 2.7 examined earlier empirical studies on the effects of remittances on household welfare and societal development in Nigeria. Section 2.8 summarises gaps found in the studied literature and a contribution to the literature is detailed in section 2.9.

2.1.1 Remittances, Households and Migrants

There are variants in the literature on what constitutes remittances and the rationale of migrants for sending remittances. Still, they all connect migrant workers' earnings and other income in a foreign location to countries of origin or any different region (Pfau and Giang 2009; Lacuesta 2010; Lubambu 2014). On the part of Lubambu, he describes remittances as cross-border, private, voluntary monetary and non-monetary (social or in-kind) transfers made by migrants and diaspora, either separately or jointly, to individuals or societies outside their home country. In essence, remittances do not only come from household members abroad; they could also come from non-family members. Lubambu's study further states that reverse remittances are possible. In which case, monies are sent from home countries to migrants at a destination to cushion hard times. For example, e.g., to support them in tough times or finance education and housing.

The World-Bank (2016) defines remittances in line with an added item in the Balance of Payments Manual 6th Edition (BPM6) as personal remittances. Personal remittances are the amounts of private or individual transactions and employee compensation. Personal remittances reflect a broader concept of worker remittances. They encompass all existing payments in cash or in-kind between residents and non-residents, regardless of the sender's source of income (and irrespective of whether

the sender receives income from labour, entrepreneurial or property pay, social benefits, and any other types of transfers; or disposes of assets).

The Bank emphasized that this is independent of the households' connection (whether they are related or unrelated individuals). According to the Bank, employee pay refers to the remuneration of workers in frontier, seasonal, and other short-term occupations who live in an economy where they are not locals and work for non-resident organizations. Employee compensation is reimbursement for labour contributions to the manufacturing process in an employer-employee relationship with the employer's entity. Scruton (2020) points out that employee compensation typically consists of three major components in the UK national accounts: cash wages and salaries, in-kind wages and salaries, and workplace social contributions. The distribution is gross payment and includes sums paid by the employee as taxes or other uses in the economy where the migrant executed the job. From these definitions, remittances include cash and gifts received from abroad that may consist of internet packets delivered directly to the phone sets of family members left behind to enable them to connect to and use the internet for economic and social activities.

According to Parsons (2016), some migrants remit a more significant proportion of their earnings than others under pressure. He says that this group of migrants behaves differently in their destination than those who spend little or nothing, moving jobs more often while unable to create positive social networks or improve income or conditions. According to the report, remittances are necessary for structurally reoccurring rural inequalities in the urban room.

Many studies suggest that remittances account for a substantial portion of many households' income. For example, Giuliano and Alesina (2007) compared Armenia with other countries in the region using household surveys to assess the effect of remittances on poverty and human resources in Latin America, finding remittances sending has a significant influence on the strength of family ties on economic outcomes. However, Tigran (2008) studied respondents' reporting of remittance receipts in Armenia. He surveyed individuals and households and found that people perceive risk in reporting the extent of remittances they receive. Respondents believe that reporting actual receipts to relevant agencies may impact their ability to accept

payments and other benefits from the state and foreign aid organisations. He states further that another potential reason that is likely to be stronger in lower-income neighbourhoods is the tendency of people to understate their wealth/income to limit the demands of poorer relatives and neighbours for loans and advances to support their livelihood. Nonetheless, migration and international remittances have become a significant source of reliance for income by many households in several ways.

According to Oxford-Economics (2021), remittances help recipient households in developing nations on a micro level by giving them an additional income source and reducing the prevalence of extreme poverty. The research emphasises that remittances serve as "social insurance," enhancing households' capacity to withstand economic shocks. Additionally, remittances enable recipient households to spend more on necessities, fund investments in healthcare and education, and accumulate both liquid (cash) and fixed (property) assets, which improves access to financial services and investment opportunities. The report further emphasizes that remittance flows to receiving countries collectively support economic and financial stability, improve creditworthiness, and promote economic growth. See also (Karpestam 2012; Meyer and Shera 2017).

Adams (2006) and Adams and Cuecuecha (2010) also find that remittances reduce poverty globally. Hanger-Zanker (2015) has shown that given the absence of credit and insurance markets in rural areas, remittances directly impact household, investment, and labour allocation decisions. Kapur (2004) highlights remittances as the most stable source of external finance and play a critical social insurance role in many countries afflicted by economic and political crises. He stresses that while remittances are pro-poor, their effects are most remarkable on transient poverty. In developed countries, migrants contribute positively to host country economies by providing lower cost and skilled labour, including in sectors that otherwise would face shortages, broadening tax bases and creating demographic support for ageing worker populations. Similarly, Ekanayake and Moslares (2020) examined the impact of worker remittances on poverty and economic development in 21 Latin American nations. They discovered that worker remittances generally result in reduced poverty levels in Latin America.

Migration and remittance research has become more popular over the years. The argument put forth by Massey et al. (1993a) states that underdeveloped capital markets and difficulties in accessing finance or capital in developing countries are significant reasons why remittances have become so crucial in the development plan of developing countries. The study's attention hinges on several grounds, particularly regarding households. They specifically state that households may desire to increase the productivity of their assets but to do so, they need to acquire capital to make additional investments. Farm families, for example, may seek to irrigate their fields, apply fertilizers, buy scientifically improved seeds, or receive machinery, but they may lack the money to purchase these inputs. Nonfarm families may seek to invest in the education or training of household members or acquire capital goods to produce goods for sale on consumer markets. Still, again they may lack money to cover these costs. Also, Adebayo et al. (2021) identify migration as one of the routes from abject poverty in developing nations. In rural versus urban, the study uses propensity score matching methodology to correct selection bias and investigate the impact of household remittance receipts on their welfare in South-West Nigeria and employed household data in the analysis. Results indicate that remittances positively impact the welfare of families in all cases, but treatment effects show that remittances made a higher impact in urban households. However, estimates were susceptible to unobserved characteristics. The authors believe that even though receiving remittances is not an exclusive means out of poverty or leads to national development, getting foreign remittances drastically enhances the well-being of rural and urban remittance-receiving households, thus lowering the risk of poverty among the recipients.

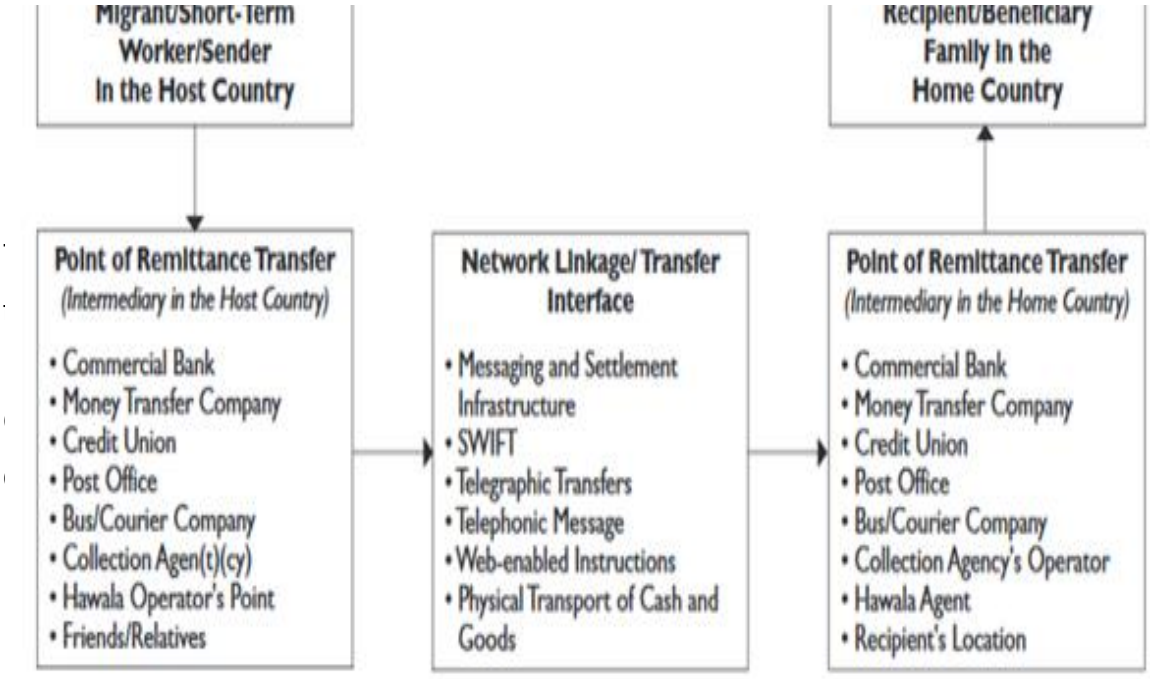
2.1.2 **Channels of remittances**

Kosse and Vermeulen (2014) have shown that remittance transfers are through bank services, money transfer operator (MTO) services, in-cash transfers via informal intermediaries, ATM cash withdrawals abroad, and cash when travelling back home. Siegel (2009) classifies the channels of remittances into formal and informal channels. Formal remittances are remittances through the standard Banking system and established Money Transfer Operators (MTOs) and informal otherwise. Informal channels include organized transfer services by third parties, such as the hawala system or other unregistered or unlicensed operators (minibus drivers, etc.) and cash (foreign exchange) transported personally by migrants. Siegel and Lücke's study

establish that worldwide, a proportion of remittances are transferred not through various informal channels. At the same time, some reasons why remittances sent through traditional financial institutions (mainly banks) are more likely than casual transfers to promote economic development. The International Monetary Fund (IMF 2007) provides a chat that illustrates the channels of sending remittances by migrants.

Fig. 2.1 depicts the remittance channels listed by the IMF. It implies that a sender, a recipient, intermediaries in both countries, and the payment interface used by the intermediaries may all be involved in a money transfer transaction; these entities collectively make up the remittance channel. Money is transferred physically in either foreign or local currency. Because they are intended for family maintenance, most remittances are low in value, frequent or regular, and include people on both sides. Remittances might be in-kind transfers, credit transfers, or both (involving goods transfers). Credit transfers, in contrast, make use of payment directives sent from service providers in the sending country to service providers in the receiving country.

Fig. 2. 1 Channels of Remittances



Source: IMF 2007

Remittance's media are not strictly regulated, such as the hawala system and the internet more recently. We briefly describe each in several studies, such as Barajas (2012). The operation of the hawala system is such that an operator in country A gets

money from the sender and instructs a fellow operator in country B to release funds to the recipient in domestic currency after identification and verification of the remittance code from the benefactor via a phone or other media). The hawala operators in each country subsequently settle transactions bilaterally or multilaterally. The settlement could involve another hawala operator in a third country. Hawala providers might work out of places like supermarkets or travel agencies.

Many factors determine the relative attractiveness of the various transfer channels, including but not limited to the level of penetration of the formal banking sector in the sending and receiving countries. The process may encourage migrants and short-term workers to use account-to-account transfers. However, despite the availability of bank services, fixed transaction costs and burdensome documentation requirements to meet regulatory obligations may render small-value transactions unattractive for banks and clients. Thus, the cost of sending money abroad may significantly influence the choice between formal and informal channels. Another reason is the proportion of recipients in the receiving country who are in the financially excluded bracket and the legal status of senders in their host countries, among others.

2.2 Theoretical Framework

Remittances are arguably essential to migration because one of the main reasons people migrate is to remit a fraction of their earnings abroad back to their communities of origin, mainly when people temporarily relocate for work (Adams and Cuecuecha 2010). Sending a fraction of wages/ other earnings back home is because temporary migrants typically leave their families behind, have strong ties with their countries of origin and maintain regular contact through remittances.

A strong bond also applies in instances of permanent migration. Thus, while migration and remittances may not have a cause-effect relationship, they are strongly associated (Sahoo *et al*. 2010). It is therefore not easy to discuss remittances without recourse to migration. The essence of discussing migration theories in this section is for us to better why migrants may wish to remit a portion of their earnings to Countries of origin and some other Countries.

Because migration and remittances now more than ever before shape households' livelihoods is one of the reasons for the inseparability between migration and remittances. Thus, livelihood encompasses the households' income-generating activities through the life cycle, social systems, interpersonal and inter households relations, and resource-seeking methods (Ellis 1998). (McKenzie and Sasin 2007) strongly argue that one cannot (in most cases) separate remittances from migration because these phenomena are intertwined and endogenous. According to Amuedo-Dorantes (2014), a household member receiving remittances from abroad is not by chance. They linked such receipts to some traits. According to the report, these traits could include having family members abroad or special needs because of their makeup. They further argue that because of this, households that receive remittances are more likely to exhibit specific traits, such as having relatives abroad or having special demands (they might have more children and/or elderly people). As a result, differentiating the effects of remittances from emigration or other family characteristics that may develop because of remittance transfers (endogeneity).

de Haas (2007a) asserts that the migratory process has reciprocal effects (system feedbacks) on the labour supply, consumption, investments, inequality, social stratification, relative deprivation, and how the local development environment is affected. In the context of theoretical and empirical issues related to the study of migration and remittances, the report explores the reciprocal nature of linkages between migration and development.

Even though migration and remittances are closely related, this study's primary focus was on remittances and how they affect households' welfare. We noted that there are many ideas relating to migration and remittances and that these theories heavily depend on the researcher's viewpoint and area of study.

The following approaches, as they relate to this study, have been considered:

- The altruistic theory and its variants
- the prospect theory
- the macro and microframeworks of the neoclassical theory of migration
- human capital theory
- dual labour market and the World-systems theory
- the new economics of migration

- the network concepts – the perpetuation of migration

2.2.1 The Altruistic Theory

Theoretical literature on previous studies on the relationship between remittances and the welfare of households can be largely attributed to Comte (1858) theory of altruism. Comte coined the altruism theory to describe his favoured ethical doctrine of remittances sending by migrants. Altruistic theory or behaviour explains the motivation underlying a migrant's decision to remit. The principle suggests that migrants will be willing to transmit resources to make up for the income shortfall of family members for either their consumption or investment. Proponents of the altruism hypothesis suggest that individual family members are obligated to help each other, which informs migrant remittent sending (Stark and Lucas 1988; Stark 1995). The Altruistic theory provides a valuable framework for understanding the basis of remittance sending in a global economy where the share of international migrants and remittances have continued to increase and contributes significantly to the finance of LMICs.

Migrant workers send money home for several reasons. The altruism hypothesis suggests that a migrant will willingly sacrifice their well-being or interest for the welfare of relations due to the love and concern they may have for their relations' welfare. According to Opong (2012), Comte believed that individuals are morally obligated to renounce self-interest and live for others. According to (Jacques 2022), the altruistic reason is a significant factor why workers may send money home because they want to maximise private welfare. According to the report, migrants allocate their revenue between consumption and acquisition of financial assets in the country of residence and family consumption and purchase of financial and non-financial assets (such as real estate) in the home country.

Delpierre (2017) classified the reasons behind workers' remittances into three categories depending on their nature: the study further argues that "*attachment*" to the home Country and portfolio diversification may be potential motives behind workers' remittances. Attachment to the home country shows that workers' remittances depend on how great their degree of altruism is. It depends on whether portfolio diversification

motivations are essential in remitting interest rate differentials between the home country and the place of residence.

1. First class - Motives in the first-class relate to payments made by migrants to recipients in their home country for investments. These payments are to prepare for return migration, settle risk-sharing arrangements, or reimburse the services the recipient provides. 2. Second class - The second class relates to the strategic bequest setting where remittances are motivated by the migrant's expectation regarding the family's future legacy. In this context, remittances increase the future bequest or the migrant's share of the endowment (Brière *et al.* 2002) and 3. Third class - In the last class, motives are rooted in the migrant's preferences, either intrinsically through altruism or extrinsically through social obligation. These preferences lead migrants to remit to help family members left behind, for instance (anticipated) parents' old age care or ensuring siblings' access to education.

In support of the generous theory of altruism, Lubambu (2014) believes that embedded in remittances is a complex reality driven by diverse socioeconomic links between the senders and recipients. Motives for remitting may be recurrent and classified to include: 1. assurance reasons, in which they see foreign receipts of remittances as prospective income sources to the recipient. Ensure households are against external shocks (part of a risk-spreading strategy). 2. altruism motives assume that migrants remit because of emotional ties to relatives in their home countries. 3. 'self-interest' motives, which cover investment or entrepreneurial purposes and personal consumption, consider remittances to overcome financial exclusion due to a lack of opportunity. 4. The 'contractual arrangements' and 'bargaining power' within a family or household (for example, the migrant worker abroad reimburses the family's debts to pay for the migration or makes payments based on an agreement made with the family before migrating. Karpestam (2012) believes migrant remittances have a dynamic multiplier effect. Although the entities involved in migration are frequently individual agents, Stark and Stark (1991) emphasise that labour migration is more complex than individualistic optimal behaviour.

Several empirical studies have challenged Comte's altruistic theory as not being valid for all migrant-remittances scenarios. For instance, Antoniades et al. (2013) provided a test on altruism and remittances. They used 105 male migrant workers from Kerala,

India, working in Qatar and elicited the propensity to share their responses in a dictator game and use it as a proxy for altruism. They find that only migrants' income robustly explains remittances and concludes that the generosity of altruism or philanthropy does not seem to matter. However, they recorded a solid positive relationship between altruism and remittances for migrants who report a loan obligation back home, half the sample.

Emigrants with higher earnings prospects could perhaps remit more; minimal households should receive more than higher-income households; and remittances should expand in proportion to the migrant's proximity to remaining household members and the migrant's intention to return, according to Funkhouser. He then proposes that remittances by a specific migrant should drop proportionately to the number of other emigrants from the same family. Migrants' time-discount factor and their earnings overseas, according to Funkhouser. Comparison will allow for deciding the remittance profile of a migrant (Rapoport and Docquier 2006). Funkhouser's hypothesis discovered that the predictions of the first two altruistic motives presented by Funkhouser are compatible with various other reasons. They also find that forecasts (3) and (5) are universal, whereas the fourth prediction is consistent with the investment, altruistic, and inheritance hypotheses.

In South Africa, Makina (2013)’s 's research looked into the timing of migrant remittances. The study discovers that migrant remittances initially rise with the length of time spent in the host nation, then fall after roughly eight years of migration experience, displaying an inverted-U pattern over time and validating the decay theory. Among other things, they found that the number of remittance repatriations has an inverse U-shaped relationship with migrant age, meaning it climbs first and then lowers. The findings by (Akçay 2017) are similar. Akçay tested the long-run relationship between remittances and misery index in Turkey over the 1975-2011 period, using the bounds-testing approach and found that remittances and misery index are co-integrated.

2.2.2 The Tempered Altruism and Implicit Contractual Hypotheses.

The theory postulated by Lucas and Stark (1985) states that the decision to remit results from the mutually beneficial informal contractual arrangements between the migrant and the home. This implicit contractual arrangement that explains a migrant's findings results from two significant factors, namely, (a) risk and investment and (b) the absence of formal insurance contracts and highly incomplete capital markets. Regarding risks and investments, most families invest in the prospects of migrants, and remittances are the return on investment for the families concerned. The second factor relating to risk is a response to the family's need to diversify income due to the risky milieu in the absence of conventional insurance contracts that both families and migrants face. Examples include farming insecurities such as crop failures, famine, and job insecurity in urban areas. Remittances are, as a result, regarded as claims on implicit co-insurance contracts. Because such informal contracts are mutually beneficial, they are self-enforcing and ensure that there is no delinquency.

Rempel and Lobdell (1978b) have criticised the family co-insurance theory. They suggest that remittances are for investment in agricultural production. Lianos (1997) has also criticised the idea that remittances are claims on informal family co-insurance contracts. He argues that it is difficult to accept that children can consciously enter into voluntary agreements with parents or family members whereby they can alter the terms of such contracts. Also, it is inconceivable that a parent could refuse to send their child to school if they refuse to migrate in the future.

2.2.3 The Prospect Theory

The prospect theory is another theory that attempts to link remittances to motives behind remittances. Its development emanated from the observed empirical violations of the normative expected utility theory, which postulates that all decision-makers seek to maximise their expected utility. The Prospect theory is of behavioural decision making under uncertainty developed by Kahneman and Tversky (1979) as an alternative to the hitherto dominant expected utility theory of decision making under risk. The theory suggests that decision-makers under uncertainty evaluate outcomes in terms of gains and losses relative to their reference point in their choice selection.

Prospect theory departs from the traditional expected utility theory in some critical respects and sits on a psychological basis for individual decision-making under risk and value. It focuses on how decision-makers choose among alternatives like utility theory but differs in terms of violations that underlie utility theory. The idea believes that what influences decision-makers most and acts as carriers of value or utility are changed rather than final asset positions that include current wealth. Also, whilst the standard utility theory postulates that people are risk-averse in all their choice domains, the empirical evidence suggested by prospect theory is that agents are risk-averse in the field of gains but risk-seeking in the realm of losses.

The prospect hypothesis, according to its proponents, may provide some explanation for migrant remittance decision-making. The social situation migrants have left behind is the most frequent point of comparison when analysing their remittance decisions. The most difficult circumstances of existence may mark the economic events migrants leave behind, but they are extraordinarily rich in fundamental social and family ties. The cost of such ties is typically intangible regarding how much they add to the quality of life. Migrants' affection for these familial and social ties is enduring and does not quickly fade from their minds. These values are frequently taught to migrant children as well.

There are usually advantages for migrants to leave their home environment to seek longitudinal economic advancement. Still, there are also disadvantages regarding the possible disconnections with the strong social and familial bonds. Opong (2012) viewed that the critical finding under prospect theory is that decision-makers are much more concerned about changes in wealth than the level of wealth under risk conditions. These conditions suggest that migrants may be more worried about the disutility resulting from disconnections from familial relations. The changes in migrants' perception of their wealthiness and well-offness in terms of their new social milieu and their decision frame of reference will sensitise them to taking such decisions necessary to avoid such perceived disutility or losses. Wealthiness or well-offness in this regard encompasses things money can and cannot buy. Prospect theory, therefore, offers perceptual and psychophysical perspectives to thinking about money, goods, and risk (Woodford 2012). As a result, it is not strange to see the positive trend of flows in

remittances to LMICs despite conditions that prompted migrants to leave their homelands in the first place.

2.2.4 Human Capital Theory

Human capital is the aggregate stock of knowledge, competencies, skill, personal attributes, or characteristics the worker must create intrinsic and measurable economic value (productivity). It represents the marketable skills of workers as a necessary form of capital in any organisation in labour economics (Matano and Ramos 2018). Thus, workers make several investments in developing their human capital. Means. Human capital is unlike any other resource. Human capital is required for businesses to reach their objectives, create, and continue to innovate. Enterprises invest in human capital to increase quality and productivity through training and education. Some studies like Amuedo-Dorantes (2014) have shown that remittances can facilitate human capital accumulation by improving sanitary conditions, healthier lifestyles, proper healthcare, and greater educational attainment.

International migration may contribute to human capital accumulation in migrant-sending societies, which can positively impact the education of family members who live in the country of origin through remittances (Yang 2008c). Remittances could improve overall well-being at the community level by raising living standards and enhancing local environments (Kanaiaupuni and Donato 1999). The initial idea of the term 'human capital connects to Adam Smith in the 18th century, who called it "*the acquired and useful abilities of all the inhabitants or members of the society*". Smith theorised that the differences in wages are paid based on the relative ease or difficulty of doing the jobs involved.

Thus, human capital is seen as a means of production, into which additional investment yields additional return or output. Adam Smith referred to human capital as fixed and classified it into four: 1. valuable machines and trade instruments; 2. Revenue-generating structures (buildings). 3. land improvements; and 4. the acquired and valuable abilities of all occupants or community members. However, the concept was made famous by (Becker 2009; Crook et al. 2011). Becker viewed human capital as a physical means of production. For example, human capital investment is via education and training. The rate of return of capital influences One's outputs. Becker

believes that human capital is substitutable but not transferable like land, labour, or fixed capital.

Marx (2010) attacked the human capital theory, which suggested that people sell their labour-power (i.e., human capital) in capitalist systems in return for income. He pointed out two facts about human capital theory. Employees should put both their minds and bodies to work to make money. The ability to perform a job is not the same as doing it. b. Employees cannot market their human capital in the same way they may sell their homes or land. Instead, individuals go into mutually beneficial partnerships with employers, just like farm owners market their produce, to use their expertise in exchange for money. According to Marx, owners of businesses must generate a profit for this human capital contract to work. Simply said, workers must perform at a higher level than is required to preserve their prospective labour force. Marx further clarified the distinction between human capital and free labour. Unlike free labour, human capital can be sold even though they do not get paid.

Several studies have linked international remittances to households' human capital development and the economies' general development in remittances receiving Countries. For example, (Khan *et al.* 2015) established that remittances significantly impacted human capital development in 17 Countries and concluded that a robust economic governance system strengthens the association between workers' remittances and human capital covering the study period. Also, Azizi (2018) finds that remittances can raise school enrolment, completion rate, and private school enrolment in target Countries.

For migrants who migrate for education purposes, migration serves as a channel of knowledge and skill acquisition which can, in turn, have a developmental effect in the migrant's home country. Education migration can raise household members' human capital through education. More so, some studies have shown that international migration may contribute to human capital accumulation in migrant-sending societies and highlights the positive impact of migrants' remittances on the education of the family members who live in the country of origin. See, for example, the Bouoiyour and Miftah (2014) study for the case of rural Morocco.

2.2.5 The Macro and Micro Frameworks of the Neoclassical Theory of Migration

The macro and microframeworks of neoclassical theory provide yet another explanation behind migration and remittances. The macro framework was the earliest developed to explain labour migration and remittances Stark and Bloom (1985). The framework sees migration as the result of geographical differences between labour supply and work demand. There may be such differences at any level, whether domestic or international. According to this theory, income inequality between countries and labour markets causes international migration. If we reduce the wage discrepancies, labour migration will cease. This hypothesis suggests that the bulk of labour migration is shifting from capital-poor/ labour rich to capital-rich/ labour-poor countries. The idea means that high-skilled workers move from capital-rich to capital-poor countries to reap higher returns on their skills through the main mechanisms of labour markets that influence international migration, with government influence limited to labour market policies.

They fine-tuned the micro-level neoclassical framework to show that wage and employment rate differences cause international labour migration. Migrants anticipate increased wages in the future in their host countries, considering the expected costs and benefits of moving from origin to receiving locations. In principle, they migrate where they expect the most outstanding returns over a specific period. Each migrant's human capital could grow if their probability of employment in the destination country and their expected earnings affect the likelihood of everyone moving. Consequently, we anticipate that migration will continue until expected earnings (wages plus probability of employment) equalise internationally.

The neoclassical framework of migration has met with criticism in several studies. Olligschlaeger (1986) examines neoclassical migration analysis's theoretical and empirical base in economic geography. The study shows that the critical assumptions of neoclassical migration analysis stem from the broader marginal equilibrium analysis and the resource allocation theory that defines the neoclassical school. It points out that the hypothesis that neoclassical economics makes concerning labour migration is that labour flows from low-wage, high- unemployment regions to regions with high wages and low unemployment, thus arriving at equilibrium. They tested the

neoclassical framework using Canadian labour migration data for 1976-1981. They discovered that the theory could not explain actual labour migratory patterns in Canada because: first, the neo-classical model's premise concerning human nature, and even those about the structure of the economy, are also both too simplified and implausible, and second, migration encourages combined causation rather than moving the system towards equilibrium and promotes cumulative causation rather than move the system towards equilibrium.

Contributing Czaika and De Haas (2014) contends that expecting a one-size-fits-all theory describing migration is impractical for all places and periods. He says that formal mathematical and conceptual models in (migration) economics still believe in functionalist equilibrium assumptions borrowed from the natural sciences and the linked fundamental premise that people's migratory (and other) goal to maximise results drives their conduct. Further, and in reaction to a critique on the narrow pecuniary focus of such theory, de Haas asserts that economists have often framed human behaviour as based on utility (instead of income) maximisation. Czaika and De Haas contends that utility fulfilment broadens the concept and includes an unlimited number of motives. This "catch-all" strategy leaves the theory susceptible to ad-hoc theorising, as any aim people value as "utility" without relying on quality traits can be included. Van Hear (2014) implores refocusing on the importance of class in researching migratory patterns. The resources that prospective migrants may mobilise will determine its outcomes. The ability to mobilise such resources is determined by socioeconomic background or class.

2.2.6 Dual Labour Market Theory

According to Doeringer and Piore (2020), the dual labour market theory was initially created by them in 1966 in their research projects for battling poverty, joblessness, and workplace discrimination. According to Klimczuk and Klimczuk-Kochańska (2016), the hypothesis postulates that employees experience challenging circumstances (odd jobs with low wages, no promotions, lack of links between a probability to work, and efficiency and education). They assumed that employee qualities that determine individual workplace and behaviour are to blame for this labour division (such as gender, age, and race).

Extending it to international migration, it argues that the economic structure of developed nations that requires a permanent supply of labour act as a pull factor for migrants. Because of the financial system of developed countries, jobs are always difficult to fill because they are dirty, dangerous, and demanding (Briggs 1993). Wages for these jobs are equally low, and so is their prestige. Hence, most original inhabitants shy away from these jobs believed to be in developed countries lower ends of the labour markets (Bottini et al. 2007). In Scott et al. (2015), the authors believe that confronting these problems may not benefit employers from attracting workers because rising wages cannot remove the social class and stigmatisation attached to low-end jobs in the developed world. Motivational issues also present teething problems: some of the jobs at the bottom level are viewed simply as an end in the host society (Heywood et al. 2010). Migrant workers from developing Countries thus take advantage of the pull factors in the developed ones to migrate.

The characteristics of the advanced capitalist economies are dualistic: Which is to say that the developed countries' labour markets are commonly classified and subdivided into primary and secondary sectors: higher wages, security, respect, and prospects for advancement (Raihan et al. 2009). This market attracts the natives. On the other hand, the secondary labour market attracts migrant workers who fill it given its low-skill, low-pay, and low-prestige jobs and, most often than not, dirty (Lucio et al. 2007)

This demand arises from developed economies' structural features: foreign wage differentials are neither appropriate nor necessary for migration. Low-level incomes in receiving societies of immigrants are unlikely to rise if their supply declines because they are socially held back by institutional mechanisms and socio-cultural according to Brunow and Jost (2021). Low-level wages in receiving societies of immigrants are unlikely to rise if the supply of immigrant workers decreases because they are undisclosed. Low-level wages may fall because of the increased supply of labour. Governments are unlikely to influence international migration built into post-industrial economies' structural mechanisms (Kapur 2014).

The dual labour market theory of migration has also been criticised by writers such as (Wachter et al. 1974). He criticised the proponents of the dual labour market

hypothesis because its interpretation is subject to some confusion. The dualists have concentrated on policy issues and have failed to develop an overall framework for their analysis. He argues further that the dual labour market rests on three general hypotheses:

1. A primary high-wage sector and a secondary low-wage industry make up the economy. Secondary low-wage sectors and the behaviour of firms and individuals in the two require different theoretical explanations.
2. The critical distinction for economic analysis is between good and bad jobs rather than between skilled and unskilled workers.
3. Workers confined to the secondary sector develop a pattern of job instability, frequently moving among positions and into and out of unemployment and labour force participation.

2.2.7 World Systems Theory

The earliest known founder of the World-systems theory of migration is Wallerstein (1974), who viewed migration as the natural outcome of the disruptions and dislocations during capitalist development and expansion. He assumed that migration intricately connects with "push-pull" factors. According to this theory, the push factors are low wages, high levels of unemployment, and lack of healthcare in the sending Countries of migrants (Stanojoska and Petrevski 2012). On the other hand, increased income, reduced unemployment, and more excellent infrastructure in destination countries incline or draw people away from their current countries of residency. In other words, improved external economic prospects are the key reason for migration (Daugherty 1995; Lewis 2010). The expansion of capitalism into peripheral countries and former colonies destroys local production systems. It beats traditional methods of tenure and attachment to local agricultural communities and drives small farms out of production.

Developing industrial centres leads to internal migration from the countryside to cities (Acosta et al. 2007). The capitalist expansion also has cultural aspects. According to Allinson and Anievas (2010), cultural imperialism exists in core capitalist countries toward the developing world, which results in the diffusion of emulated consumption habits and cultural models. These, in turn, became driving forces behind international

migration. International migration, therefore, becomes a natural consequence of capitalist market formation in the developing world and the global economy's penetration into peripheral regions (Massey et al. 1993a; Joly 2002; Rocha 2003).

Within this world system, the international flow of labour moves opposite the global flow of goods (Freund and Spatafora 2008). International migration grows primarily in the context of colonial relations. According to this theory, we can manage international migration through policies that regulate the globalising market economy (Moretto and Vergalli 2010). (Jackson 2010), suggests that we can also control migration by protecting overseas investments, including the military and political intervention in the political life of developing countries.

2.2.8 The New Economics of Labour Migration

Stark (1978); (Stark and Bloom 1985), started the debate on the new economics of labour migration hypothesis. Stark and others in the school of thought rejected the neoclassical models, which evaluated individualistic and rigid deals with migration and development interactions' complex and diverse realities. De Haas (2007) posits that the innovative approach has become a viable alternative to neo-classical and structuralist approaches, gaining increasing acceptance throughout the 1990s. The theory emphasises the behaviour of individual migrants in a broader societal context. It considers not the individual but the family or the household as the most appropriate decision-making unit. This approach integrates factors other than individual income maximisation as influencing migration and remittances decision-making and models migration as risk-sharing behaviour of families or households. See also (Todaro and Maruszko 1987; Taylor 1999).

Lucas and Stark (1985); Lucas (1997), explain that internal and international migration are regarded by a household as a response to income risk and believe that migrants' remittances can insure against income losses or fluctuations for families of origin. The fundamental belief is that people and household members act to maximise income and minimise and spread risks. This motive (risk-spreading) explains the occurrence of migration in the absence of (ordinary) wage differentials. Lucas and Stark believe that the basic idea underpinning this behaviour is that, for the household, it may be a

Pareto-superior strategy to have members migrate elsewhere, either as a means of risk-sharing or as an investment in access to higher earnings streams. Under the new economics concept, (de Haas 2007a) argues that migration is perceived as a household risk-spreading strategy to stabilise income and as a strategy to overcome various market constraints (Dunn 1994).

Acosta (2020); Ellis (1998); and Gamlen (2017) agree that migration is a crucial component of strategies to diversify, secure, and potentially improve rural households. According to the reports, they frequently combine with other techniques, such as agricultural intensification and local non-farm activities. Carney (1998) views that for their livelihoods, people and households draw on five categories of assets (or capitals): natural, social, human, physical, and financial and defines it as a planned or coordinated mix of actions by families and their members to maintain, secure, and improve their livelihoods.

The above theories have provided us with some perspective because migrants are likely to remit to support their families and friends in times of need. Therefore, the willingness to remit may not be obligatory but could derive from affinity with family members and friends left behind at home. From the theories, it is apparent that they all have something in common, Expectations, relationships, obligations, and self-interest of migrants. However, Brettell and Hollifield (2022) cautions that there is no single theory widely accepted by social scientists when it comes to migration and remittances. Notwitstanding, the altruism approach tends to explain the current situation at hand better than other theories to describe the concept of migration and remittances.

2.2.9 The Network or Social Capital Theory

According to Machalek and Martin (2015), Bourdieu (1985) first defined the network or social capital theory. A variant of social capital theory is the network theory proposed by Granovetter (1973) based on the strength and weak ties of migrants, which he criticised ten years later (Granovetter 1983). Bourdieu's social capital theory is a model used in explaining international migration resources through a network connection of migrants (Lin 2008). Potential migrants can get knowledge or immediate assistance

from social capital resources on the previous migrants and thus, enhance remittances sending (Zadeh and Ahmad 2009). The study by Ryan et al. (2008) demonstrates social capital theory in practice among Polish migrants in London. Garip (2008) argues that prior migrants may provide help with transportation to or living arrangements at the intended destination, thereby reducing the migration costs projected. Garip believes that this narrow definition of migrant social capital resources as information or direct aid ignores social norms and expectations that might operate as a source of social capital.

The basis of the network approach, according to Castles et al. (2005), is categorised into three:

a. That International migration grows until links are broad enough for everyone who wants to move to that region without difficulty.

b. The correlations between wage differentials or employment rates and migration flows hardly exist; and

c. Managing movement in this sense is complicated, as migrants' networks are formed outside the country and occur regardless of policies pursued.

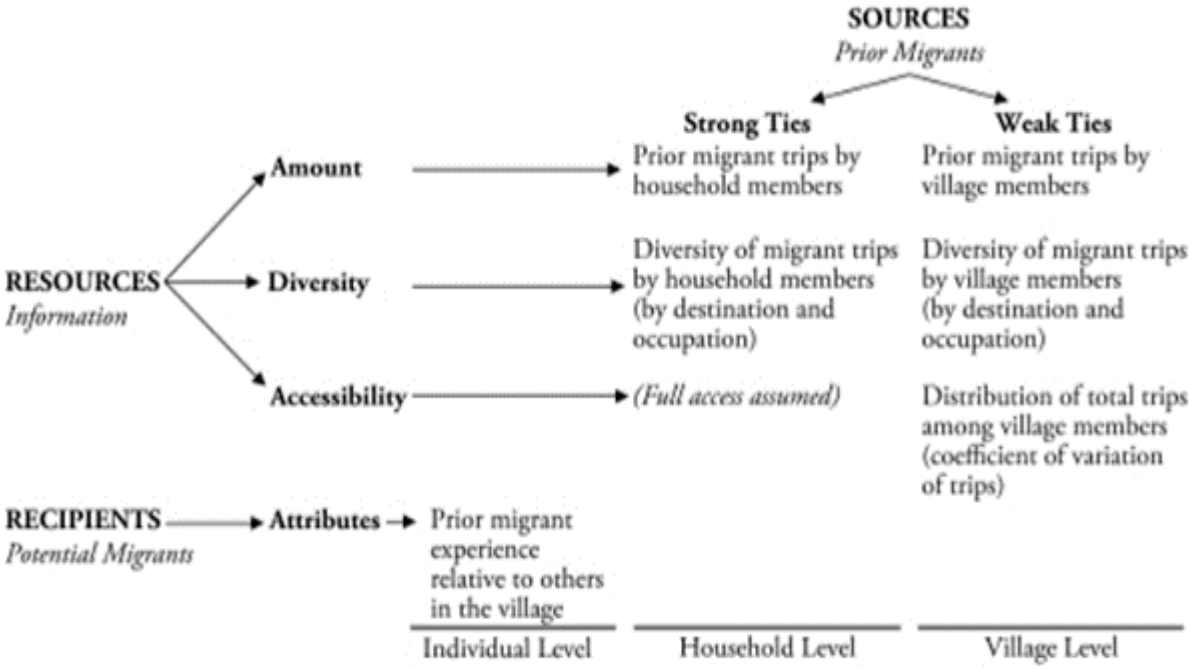
In the literature, the term migrant social capital explains the information about or direct assistance with migrating provided by prior migrants that decreases the costs of moving for potential migrants (Massey and España 1987; Massey and Zenteno 1999). Intending migrants, therefore, access the resources through the networks, a set of interpersonal ties based on kinship, friendship, or shared origin community that connect migrants and non-migrants (Massey et al. 1993b).

Garip (2008) constructed a network diagram to summarise proposed migrants' social capital indicators along the conceptual dimensions of resources, sources, and recipients. It illustrates how resources and information flow between prior or experienced migrants and potential or recipient migrants in the social capital network or chain. As shown in figure 2.2, he elicited locations of diversities and migrants' ties in the diagram. He posits that diverse resources (e.g., information about a range of destinations or help with finding a variety of jobs) may imply a more considerable

choice set for the potential migrants and hence increase their propensities of migrating, all things being equal. The study assumes that the resources prior migrants possess can be proxied by the amount of experience in destinations and hence use knowledge and resources interchangeably.

Thus, the social network or social capital hypothesis points to one of the many reasons migrants are likely to send remittances back to their origin countries and act as a link for sharing knowledge on risks and opportunities. The framework below is provided by Garip (2008) to describe the dimension of the connectivity between and among migrants. The network diagram summarises the proposed migrant social capital indicators along the conceptual dimensions of resources, sources, and recipients.

Fig. 2. 2 Dimensions of Migrants Social Capital and Proposed Operational Measures



Source: Garip, 2008

According to Garip, the above connections, as illustrated, imply that various features of resources (such as diversity and accessibility) may allow recipients to influence migratory patterns not only straightforwardly but also indirectly through their impacts on the influence of resource value. More broadly, these findings indicate that similar resources (in quantity) can function differently depending on their accessibility or diversity.

Many researchers have suggested gaps in the theory and saw network research as powerfully descriptive but not theoretical. They viewed the concept of social capital as having theoretical ambiguity and variability, which remains a problem (Gowan 2011). Claridge (2018) opined that the main criticisms of the social capital theory are that it is not social, not capital, and not an approach and thus, leaves the concept with much substance. Haynes (2018) argues that it is impossible to measure and therefore appears tautological. He further contends that the possibility of positive or negative outcomes makes it context-dependent.

Other critics, such as McShane et al. (2016), believe that some aspects are objective, but others are subjective. Specifically, Woolcock (1998) strongly argues that social capital can be rational, pre-rational, or non-rational. Rationality may imply that social capital is more of an umbrella concept than a functioning theory (Haynes 2009). However, many authors, Tittenbrun (2014) and McKeever et al. (2014), believe that social capital seems almost immune to criticism despite the critics.

2.3 Remittances and Development: Some Empirical Evidence

Remittances to developing countries (particularly worker remittances) are considered by many to impact households and the economy positively. Because of their quantum, many studies on the subject agree that they provide alternative sources of finance for families in developing countries. According to Arif *et al*. (2019), worker remittances offer valuable sources of income, notably for developing economies. They are assumed to be a stable source of income in comparison to Foreign Direct Investment. Remittances also constitute the second-largest source of finance, behind FDI, of external funding for developing Countries Ratha (2005). Ratha stressed that while capital flows tend to rise during favourable economic cycles and fall in tough times, remittances react less violently and show remarkable stability over time. The study noted further that those remittances augment the recipient individuals' incomes and increase the recipient Country's foreign exchange reserves. It also stressed that investing remittances contribute to output growth, and if consumed, they also generate positive multiplier effects.

Arif *et al.* (2019) used balanced panel data from 1994 to 2013 from the top eight middle-income group remittance recipient countries, namely Bangladesh, India, China, Egypt, Pakistan, the Philippines, Nigeria, and Mexico, classified by the World Bank in 2015. The findings revealed that pooled mean group (PMG) (panel ARDL) coefficients supported the long-term relationship between the variables studied (HED, which is a measure of development) and the welfare of households. Cointegration and panel ARDL are the techniques used in the analysis. To assess if families with migrant relatives receive more significant remittances more easily than families without migrant families overseas, Schrieder and Knerr (2000) used survey data from 1991–1992 and specified the Probit and Tobit Model to analyse smallholder households' access to remittances in Cameroon. This research's key finding is that migration and remittance schemes fail as a social security tool when a potential remitter does not anticipate receiving a sizable bequest.

Chiwuzulum Odozi *et al.* (2010), used the Nigerian Living Standard Survey (NLSS) database compiled between 2003 and 2004, consisting of 92,613 individual observations and 19,158 household heads, to evaluate the effect of remittances on households' poverty and inequality. They combined household income from all sources, including wages and salaries, farming, non-farming businesses, rental income, and remittances. The remittances' quantities, frequency, and sources were taken from the income transfer file and used as measurement variables. They used tables, percentages, and averages to analyse the data collected, along with the counterfactual methodology proposed by (Brown and Jimenez 2008). The findings indicate that 94 per cent of households received remittances through internal routes and that remittances reduced the number of people living in poverty by 20 per cent and helped to eliminate income inequality among households.

Similarly, Maimbo and Ratha (2005) analysed the effect of Workers' remittances as a source of external development finance to developing countries in the Economics Seminar Series 9 of the World Bank using summary statistics and other charts. The study drew from studies such as (Taylor 1999), and McCormick and Wahba (2003). They found that public income transfer schemes in the United States increased remittances to Mexico. Other things being equal, immigrant households that received Social Security or unemployment insurance were 10 to 15 per cent more likely to remit.

Their monthly remittances abroad (especially in Mexico) were $150 to $200 higher than immigrant households not receiving public transfers. Many returning migrants in the late 1980s set up their enterprises using funds from abroad. The study concludes that low-income countries, considered high-risk, receive more remittances as a share of GDP than countries with higher incomes. However, as expected, remittance flows are affected by the economic cycle of the source countries. It noted further that the financial or business circle of most developing countries are with interruptions, social crises and cautious and, thus, highly unpredictable, and unreliable.

Chowdhury (2015) investigated the households' characteristics and the modes of remittances in Bangladesh using a multinomial logit model to uncover the relationships between the variables of remittances of the families with the features of the households. He employed data from the Households Income and Expenditure Survey (HIES) of 2010 conducted by the Bangladesh Bureau of Statistics (BBS). BBS surveyed 612 Primary Sampling Units (PSUs) throughout the country (out of 1000 available PSUs). Despite some limitations in the study, it finds that the modes of remittances selected by the households depend on the characteristics like rural-urban locations, the ratio of male members, sex, and age of the heads of the homes. Specifically, the study finds, among other things, that households with female leaders had a higher probability of receiving both internal and international remittances.

To examine the impact of international migration and remittances on poverty in the developing World, Adams and Page (2005, pp 1645), posed the question 'Do international migration and remittances reduce poverty in the developing Countries'. They attempted the question by assembling migration and remittances data on 71 low income and middle-income developing countries from 1980. They obtained the stock of migrants for each country in the sample from records of labour receiving Countries that kept accurate records of migrants' influx that they produce to overcome the problem of inadequate data. Second, they got IMF data on official workers' remittance flows, i.e., remittance monies transmitted through official banking channels. In addition, the study used published results of the household budget surveys of the sampled countries.

The basic growth-poverty model formulated by Ravallion and Chen (1997) was used to analyse the constructed models for the study. The findings show that both international migration and remittances have a major, statistically significant impact on poverty reduction in the developing world and that, on average, as the number of international migrants in a country's population grows, the fraction of people living on less than $1.00 per person per day decreases by 2.1 per cent. The global movement of people and monies repatriations to countries of origin may be endogenous to poverty, implying that changes in poverty in the developing world could lead to changes in the fraction of migrants moving abroad to work and the amount of formal international remittances sent home.

The above findings indicate that international migration and remittances can positively influence development in developing countries. The works of Anyanwu (2011) and Fadayomi *et al*. (2014) also show that international remittances positively impact the welfare of households in many aspects such as poverty and health in developing countries but can also have adverse effects on labour supply, education, and economic growth in some respect.

2.4 Remittances as a Source of Business Finance

Sourcing financial capital by households in developing countries particularly in Nigeria have always been a herculean task due to series of obstacles. Many households therefore rely on the receipt of foreign remittances to finance their businesses but lacks effective policy direction. The increasing remittance flows to developing Low and Medium Income (LMI) countries are believed to provide them with an alternate source of capital or finance and the concepts and skills needed to start new enterprises or heal existing ones. This linkage has been established in many empirical works in the literature on remittances. According to Kakhkharov (2019), many governments' policies in migrant-sending nations focus on turning the remittances sent by migrants into a financing source for enterprise and other development projects of households. The study stressed that small, family-owned firms become essential to employment generation when backed by sound policies, which benefits families. The study examined the relationship between remittances and investments in entrepreneurship using information from a survey of Uzbek residents' occupations, skills, and migration

known as the "Uzbekistan Jobs, Skills, and Migration Survey". Constructed models were analysed using Probit regression. The study's results show that remittances and savings from labour migrants helped Uzbekistan's finance system grow by encouraging the creation of efficient money-transfer intermediaries. However, it is unclear how well these flows support the demands of family firms.

Ngoma and Ismail (2013) which investigated if migrant remittances contributed to human capital development, is another instance of empirical research of this type. To investigate the impact of remittances on the development of human capital in 89 developing countries, they used the Generalized Method of Moments (GMM) estimation on aggregate data from 1970 to 2010 in five-year intervals. According to the study, remittance flows are influenced by the economic cycle of the source nations, which, despite its macro perspective, unquestionably has an impact on families at the micro level through the development of their earnings characteristics. The article went on to remark that the economic and business environments in most emerging nations are disrupted by social crises, cautious, and cautious, making them highly unpredictable and unreliable.

The ability of households to make a living is a crucial component in obtaining capital. In order to identify the correlations between the variables of remittances of the families and the characteristics of the homes, Chowdhury (2015) examined the characteristics of the households and the modes of remittances in Bangladesh using a multinomial logit model. He used information from the Bangladesh Bureau of Statistics 2010 Households Income and Expenditure Survey (HIES) (BBS). 612 Primary Sampling Units (PSUs) were surveyed nationwide by BBS (out of 1000 available PSUs). The study finds that the modes of remittances selected by the households depend on the households' characteristics like rural-urban locations, the ratio of male members, sex, and age of the heads of the homes. Specifically, the study finds, among other things, that households with female heads had a higher probability of receiving both internal and international remittances.

Ajide and Osinubi (2022) examine how foreign aid assistance and remittance inflows affect the growth of entrepreneurship in Africa. The study, which used panel data regression techniques, looked at the effect of remittance and foreign aid inflows on the growth of entrepreneurship in 19 African nations from 2006 to 2017. The study

concludes that foreign aid negatively impacts entrepreneurship, whereas remittances and institutional quality act as buffers against this influence. The study concludes that robust institutional environments are crucial for fostering entrepreneurial success and that remittances and foreign aid play complementary roles in raising the degree of entrepreneurial development in Africa.

Boly *et al.* (2014), examined existing diaspora investment, the creation of new enterprises by migrants in their homelands, and firm competitiveness to determine whether diaspora investors differ from home firms in export actions and foreign investment. They did this using data from enterprises in selected Sub-Saharan African countries. The data used came from the UNIDO Africa Investor Survey in 19 different nations, including Burkina Faso, Burundi, Cameroun, Cape Verde, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Senegal, Tanzania, Uganda, and Zambia.

The study examines the variations in export performance in diaspora enterprises and local and foreign ones using two empirical approaches to data analysis. First, it used a non-parametric method based on the export intensity of diaspora enterprises relative to domestic and foreign firms and diaspora firms. Second, it carried out statistical tests of first-order stochastic dominance. Even when accounting for other significant business characteristics, the trials, and empirical data reveal that diaspora enterprises are more likely than domestic firms to be exporters, to export more frequently, and to export to more destinations.

The research by Terrazas (2010) also reveals that the financial inflows from migrant workers and their progeny are primarily responsible for the link between migration and progress. Extensive data from the study shows that diasporas have significant financial assets, such as retirement and savings accounts, real estate, debt, and equity, in addition to their current income. *Remittances* are a vast and essential intra-family cash flow that can significantly impact financing businesses in developing countries.

Djido and Shiferaw (2018) examined the pattern of labour productivity and income diversification in Uganda and Nigeria using the panel data from the Living Standards Measurement Study-Integrated Survey Data on Agriculture (LSMS-ISA) for Nigeria (2010/11 and 2012/13) and Uganda (2009/10, 2010/11, 2011/12). The ratio of the

returns to family labour and land was created as a measure of labour productivity (value of farm production minus the operating cost of production). Additionally, the ratio of total labour input to returns on capital and returns on family labour (defined as the sum of paid labour and profit from operating an enterprise). The study used two high-value agriculture and non-farm activities indexes to construct the income-diversification model and gauge the high-value agriculture and non-farm activities in the two nations.

The major conclusions demonstrate that measures of the labour productivity gap support the growing agreement that, to distinguish between productivity and employment gaps, labour productivity needs to consider improved estimates of the intensity of labour employed across economic activities. There was a favourable correlation between labour productivity and income diversification in any sector. Given the potential trade-offs in labour productivity growth between farm and non-farm sectors, research and policy should focus on removing obstacles and fostering avenues for income diversification to increase incomes and labour productivity in agricultural and non-agricultural sectors.

2.4.1 The Effects of Lack of Finance for Businesses

For a household to engage in any business, finance is critical. Without it, even the most brilliant enterprise idea or endeavour dies. Compared to industrialised countries, households in many developing-countries lack access to capital for various reasons. According to (Beck *et al*. 2009), about than half of the population in many developing nations has access to formal financial services. In contrast, less than one in every five households in Africa has. According to the research, a lack of access to finance is frequently the primary mechanism for generating persistent economic inequality and slower growth. It identified expanding access as a significant challenge worldwide, with much left to be done by governments. However, Beck et al. point out that not all government activities are equally effective, and those specific policies might be harmful. Expanding access to finance is especially important for Nigeria, which has had a long history of inadequate financial access by poor households. Insufficient access to finance worsened by economic and social shocks of all kinds currently rock Nigerian families.

Numerous factors in Nigeria cause a lack of access to capital or inadequacy of it by households. One major cause is financial market imperfections. According to (Anyiro and Ajuka 2014), showed that factors that hinder financial access include the method of generating funds, age, mode of entrance and of exit, sex, marital status, occupation type, how information is acquired, and the number of visits by external agencies were the key indicators of extent of access to social capital. These factors characterise financial market imperfections which come from information asymmetries and high transaction costs in (Beck *et al*. 2009) . These factors can have adverse binding effects on the talented poor and the micro and small enterprises, which lack collateral, credit histories and connections, limiting opportunities. The studies by (Fromentin 2017); and McKenzie and Woodruff (2008) also point to some of these factors as being hindrances to financial capital businesses. Financial market imperfection has therefore primarily contributed to the high level of unemployment in Nigeria and an obstacle to financing by households. According to (Price 2019), with the job market in Nigeria being complex and multifaceted, Nigerians see unemployment as one of the main problems facing the country, well above poverty, and the lack of job opportunities concerns explicitly young people (World-Bank 2016). Mabhungu and Van Der Poll (2017) lists similar factors as obstacles to finance in Turkey.

Another factor responsible for the lack of finance in the region is the wide gap between government policy and the implementation of these policies. Given the belief that small and medium scale enterprises are catalysts for economic growth and development in developed and developing countries, the Nigerian government established the Small and Medium Scale Enterprises Development Agency (SMEDAN) in 2004. It aims to provide finance to households and other stakeholders engaged in Small and Medium Enterprises (SMEs). According to (Fatai 2011), SMEDAN is expected to develop the not-too-well developed private sector to which the households belong by providing access to finance or funding to SMEs to stimulate employment generation, facilitate economic recovery and national development.

However, the agency has not lived up to expectations as the implementation of programmes and policies has met several hitches. Onugu (2005) identified lack of access to capital, inadequate infrastructure, inconsistency in government policy, and bureaucracy, among other reasons, as some of the factors militating against SMEs in

Nigeria, which many households strive to engage in. See also the studies by Oliyide (2012) and Ozioma-Eleodinmuo (2015) for relevance on the factors hindering households access to finance.

Most families involved in non-farm income activities in the region undoubtedly fall into this category of mini-micro, micro, small and medium scale businesses. The shortage of finance has remained a major limiting factor, notwithstanding that one of the core missions of SMEDAN is to facilitate and promote access of MSMEs to resources required for their growth and development. (Effiom and Edet 2018)**,** named corruption (diversion of funds, embezzlement etc.) and inconsistent government policies as banes to the development of SMEs in the region. Umoh (2006) looks at the internal and external issues micro businesses encounter that impact their ability to participate in the Nigerian loan market. According to the report, 61.3 per cent of the enterprises' loans came from unofficial sources. A lot of non-farm businesses owned by Nigerian households fall within this description. In contrast, 30% of the population refrained from applying for loans due to insufficient collateral security, complex loan processing procedures (25%), and excessive interest rates (20 per cent).

Lack of access to capital has remained a significant challenge, despite the rise in overseas remittances to Nigeria. Because of this, households with access to remittances from overseas rely on them to finance their businesses. Due to a lack of credit access, raising capital becomes more difficult. As was already indicated, past studies have not paid enough attention to the amount of money at which remittances efficiently offer finance to households. Therefore, we contend in this study that remittance receipts cannot always significantly influence households' financial resources. The debate over how remittances affect the capital finance of households in developing nations is far from settled. While numerous studies have found remittances to be an essential source of funding for family-owned enterprises, others have found remittances to have a detrimental impact on household finances, lower a nation's international competitiveness, and motivate laziness, among other things (Hagen-Zanker 2015). According to Shcrieder (2000), a migrant's remittances could even fail as a social security mechanism if the possible remitter does not anticipate any sizeable inheritance.

2.5 Remittances and Post-shock Consumption Smoothing of Households After Shocks

In developing countries, adverse economic shocks come in multifaceted dimensions and can be disruptive and disheartening. Such wonders can have heterogeneous effects on consumption and the demographic composition and labour supply of families member left behind (Gröger 2021). See also Theloudis (2017). Shocks are even worse for rural agricultural households, as is the case in Nigeria, where the rate of rural poverty compared to urban is disproportionately alarming. In addition to the many reasons already listed, rural households suffer other disadvantages in their daily economic lives, such as the inability to sell agricultural produce and the confiscation of farmlands by government agencies for developmental purposes without compensation (Desanker 2004; Joubert et al. 2008; Henry 2009).

Following Bartik (1991), Gröger (2021) investigated how labour market shocks impact families in migrant countries by utilising Vietnam as a case study. The study combines longitudinal data on the change in unemployment rates by destination and skill groups throughout the crisis with cross-sectional data on the locations and skill levels of foreign migrants before the great recession. The author created a proxy that accurately represents the employment shocks Vietnamese households experienced due to their migrant workers' departure. The investigation used data from two rounds, between 2008 and 2013, on families and their migrant workers. They gathered a total sample size of 507 migrants from both domestic and international migration through proxy respondents, who were often the head of the family. The study used the dynamics of economic shocks among migrants in each destination by using unemployment rates rather than alternative metrics like GDP.

1. The study used the following methodology to develop the empirical construct for the analysis:
2. 1. Concentrating on a sample of Vietnamese homes with foreign migrants from various international destinations.
3. 2. They relied on believable external, and heterogeneity of shocks caused by the recession, which harmed households in Vietnam via their migrants overseas, conditional on migrants' choices of foreign location and educational level before they left.

4. 3. The data used a panel of households at the origin, the location of both domestic and international migrants, and the relevant outcome factors. The author's assessment of the connection between labour productivity and income diversification in each industry is upbeat. There are possible trade-offs between agricultural and non-agricultural sectors in productivity gains. The study suggests that research and policymakers should focus on identifying obstacles to earnings diversification and fostering avenues that will boost incomes and productivity increase in both farm and non-farm sectors.

They used a difference-in-difference measure of shock for the estimation based on the description given above. The findings demonstrate that shocks had large and varied consequences on the demographic make-up of Vietnamese families and the labour pool that left back at origin during the Great Recession. More precisely, the study reveals that impoverished households were adversely impacted and struggled to deal with declining local labour migration while growing external labour migration, which increased fertility and the supply of workers from their countries of origin. The study also reveals that wealthy households were unaffected by this change.

Zereyesus et al. (2016b) used multiple indicators causes model to undertake an econometric evaluation of the physical well-being at the family level for a sample of homes in Ghana. The quantum of underweight mothers, retarded children, and wasted children was a sign of bodily well-being. The findings imply that the latent variable captures family well-being, which can be conceptualised similarly to that of the family's members. The findings indicate that the most significant changes in the physical health of a household are related to the father's literacy and the number of dependents. Additionally, the location of family assets substantially correlates with the underlying latent variable. Woldehanna (2012), has shown that, in Ethiopia, families are frequently affected by both regional shocks like drought and bad harvest and idiopathic shocks like family member disease and death, rises in food costs, and job loss including prenatal and postnatal shocks. Woldehanna used the ordinary least square (OLS), instrumental variables (IV) estimation or generalised method of moments (GMM), and probit approaches to explain early childhood malnutrition and recovery from stunted development. According to the results, shocks affect the growth of children due to malnutrition arising from shocks.

Zereyesus et al. (2016a). looked into how shock and remittances affected households' susceptibility to food insecurity in Bangladesh. To measure a person's susceptibility to poverty, they described a log-linear probability function that considered expected mean income and its variability (with the income variability being influenced by idiosyncratic and covariate shocks). It divided the components of shock sources into those that could be observed and those that couldn't. The reported negative shocks may include unanticipated price increases, the disappearance of productive assets, the deaths of animals, and healthcare costs associated with injury or sickness.

The investigation used 5844 households' worth of data from the Bangladesh Integrated Household Survey (BIHS) between October and November 2012. The survey categorises positive economic shocks as remittances and stipends for primary and secondary schooling, among others. Non-observed shocks are the remainder of shocks that the seen data failed to observe and record. The model identified covariates at the family and community levels and used them as regressors in the models built. According to the findings, positive and negative economic shocks impart households' food, which changes how vulnerable they are to food insecurity. Additionally, it discovers that economic occurrences like remittances significantly influence households' welfare because they supplement their income during lean periods, increasing their consumption levels and lowering their susceptibility to poverty.

Yang (2006) examines Philippine households' responses to overseas members' economic shocks by (e.g., exchange rate shock) posing the question: How do migrant earnings affect origin-household investment? The authors generated variables from micro-data from four linked household surveys conducted by the National Statistics Office of the Philippine government between 1997 and 1998. The data is a nationally representative household sample: the Labour Force Survey (LFS), the Survey on Overseas Filipinos (SOF), the Annual Poverty Indicators Survey (APIS) and the Family Income and Expenditure Survey (FIES) are two surveys that measure poverty. The final sample involved 1,646 households.

The first step in the study is the creation of differenced regression equations that consider the effects of pre-crisis characteristics and post-financial crisis features on the outcome variables (child labour, entrepreneurial activity, etc.). As a percentage of total household income during the pre-crisis period, remittance receipts estimation was 0.395. Throughout the investigation, the average change in remittances (as a percentage of total household income prior to the crisis) was 0.151. (i.e., growth in peso remittances amounted to 15.1 per cent of initial household income). The analysis concludes that most remittances are spent rather than invested. The study adds to its conclusion that substantial exogenous shocks to the wealth and income of Filipino migrant families, which reveal themselves through shifts in remittances, have little influence on their consumption but have a considerable impact on several other household types. The analysis also reveals that favourable exchange rate shocks allow households to increase their outlays for non-consumption in several categories. More likely to be investment-related (in educational costs), keep kids in school longer, keep them out of the workforce, increase the number of hours they work for themselves, and start their businesses.

Sharma (2010) did a thorough evaluation of the research on how remittances affect economic instability acknowledging that previous studies have demonstrated that remittances can ease household spending and lower poverty. But the impact of foreign remittances on poverty is complex and multifaceted. Remittances have reduced poverty in many countries, according to data from econometric studies and family surveys. However, the study states that the extent of the reduction has varied and is largely dependent on how poverty is measured. Additionally, he cautioned that it is crucial to take changing and even contradicting effects on a variety of factors, such as distribution of income, savings, investment, credit access, and work motivation, into account when examining the longer-term effect of remittances on poverty. Most of the time, the results seem to be in his favour, but he concludes that the impact of remittances on the longer-term economic prospects of the receiving household depends heavily on the qualities of the migrants and the environment in their home country.

2.6 Remittances and Households' Internet Access/Utilisation in Developing Countries.

Before the internet age, remittances were typically transferred intangible cash and gifts through physical routes such as person-to-person, through return migrants, through agents' companies by migrants in foreign lands to their household members and associates at origin (Ratha 2017; Ratha 2020). All of which had their bottlenecks and drawbacks such as cost of sending (Cecchetti and Schoenholtz 2018)**.** Returning migrants who may have gained skills vital to drive growth in migrants' sending countries might also send remittances in skills transfers Opong (2012), and or set up enterprises. With the advent of digital platforms such as WorldRemit, OrbitRemit, Azimo, and other e-platforms channels have sprung up.

Due to the internet, personal remittances from migrants in foreign countries are now also being sent in the form of airtime top up and data bundle transfers directly into recipients' mobile phone or broadband accounts. This is because, given the importance of the internet in modern life and the incapacity of households in developing countries to access the internet for welfare enhancing activities and the inability of many households to do so due to cost of access, infrastructure, and other factors, families increasingly rely on remittance payments to cover their internet access costs. Recipients can sell the bundles for cash or use them in online e-transactions, which has the potential to improve home welfare, just as cash and gift goods as forms of remittances. However, not much research has been done that investigates the link between remittances sent this way influence households accessing and using the internet in the context of a developing country like Nigeria. in the form of data bundles.

The internet plays a central role in today's everyday life of households. Jansen (2010) studied internet usage in families with higher incomes in the United States of America (USA). He finds that the likelihood of higher-income families using the internet daily, having more internet-capable gadgets, conducting financial transactions online, and accessing news online is higher compared to low-income households. The study compared internet users' cohorts and concluded that the most apparent difference in internet participation between different economic levels often depends on how much

they utilise it. The report reveals that users within higher income groups engage more in online activities daily than those that fall in lower income groups.

Masaki *et al.* (2020) integrated the most recent two rounds of household budget survey data with information on the locations of fibre optical nodes and coverage maps of 3G mobile technology to analyse the relationship between family welfare and connect to broadband service between 2011 and 2018. According to the findings, a 14% rise in total consumption and a 10% decrease in severe poverty resulted from 3G penetration. These benefits are more pronounced in urban homes, households led by men, and households with younger generations. These findings held even when road density, evening lighting among other household characteristics were controlled for. In the same vein, (Ankrah Twumasi et al. 2021) investigated the influence of internet use on food and nutrition security in rural Ghanaian families. The study found that using the internet can help "increase smallholder farmers' food and nutrition security. In (Ma *et al*. 2018) found that Internet usage significantly impacts household food security with off-farm work and increasing landholding sizes in China.

In the context of women's empowerment in underdeveloped nations, households' access to and usage of the internet is also essential. For instance, Hossain and Samad (2020) examined the effects of mobile phone use on household welfare and women's empowerment using household survey data from rural Bangladesh's off-grid districts. The study used two-propensity score-based weighted regressions for the analysis and discovered that mobile phones promote women's empowerment and facilitate consumption smoothing during times of shock, increasing household income by 3–10% from sources like small businesses and remittances (IPW and AIPW).

We have discussed much regarding the importance of the internet for household wellbeing and the empirical findings have shown that the welfare benefits of households having access to, and using the internet are enormous in enhancing the welfare of households.

However, being able to access the internet by households in many developing countries is different altogether because it depends on several factors. Due to a lack

of finance and other constraints, the cost of entry for most households in developing nations is high and expensive. The lack of finance by families is made worse in these countries due to inadequate digital infrastructure and penetration rates. Like Nigeria, most developing countries face extreme poverty, conflict and bloodshed, displacement, flooding, religious intolerance, and network infrastructure deterioration. These factors impact the cost of access for households. These considerations boil down to cost, and they are crucial when examining the effects of the internet on household welfare. Given the high cost of internet connectivity, households rely on remittances from migrants, particularly those from wealthy nations, to support their access and utilization.

2.7 Remittances Studies in Nigeria

As was already indicated, little is known about the impact of remittances on the various facets of household wellbeing. Despite the literature's recognition of the significance of remittances to households, most developing nations lack adequate statistics on this subject (Ratha and Shaw 2006). Here, I look at some empirical research on the relationship between remittances and household welfare in Nigeria.

Olowa *et al.* (2011) examined the link between remittances and households' expenditure in rural Nigeria. They specified an OLS econometric model to investigate how the receipt of domestic remittances (from within) and foreign remittances (from abroad) affects the marginal spending behaviour of households on various consumption and investment goods. They employed data from Nigeria's 2004 living standard survey in the analysis. The expenditure items they considered include spending on consumer goods, health care, housing, education, and other areas.

One of their key conclusions is that recipients use a small portion of their remittances receipts to purchase consumer goods. They find that households receiving domestic and foreign remittances spend 54.2 and 55.9 per cent of their increments on consumption goods, respectively, compared to households not receiving remittances, which spend 58.9 per cent on consumption goods such as food and consumer goods, durables; 2. Instead of spending more on consumption, families receiving remittances tend to view their remittance earnings as a temporary (and possibly uncertain) source of income; and 3. In terms of the value of remittances spent on housing, they discover that households receiving domestic and foreign remittances are, on average, spending

15.3 and 2.2% more on housing, respectively. The study concludes that, from the perspective of the individual migrant, higher housing costs are an investment because they result in a higher rate of financial return than those households who do not receive remittances. These higher housing costs are considered consumption spending from an economic perspective. The report did not specify what kinds of investment items receivers were buying, nor did it discuss how these remittances affected households' access to credit for commercial purposes.

Iheke (2012) used yearly data from 1980–2008 to investigate how remittances affected the Nigerian economy using descriptive statistics and OLS regression to analyse the collected data. According to the findings, remittances, per capita income, and investment all positively and significantly impacted output. Additionally, it discovers that the consumer price index adversely affects outcomes significantly. The study argues in favour of creating good, macroeconomic policies and better infrastructure that may create a favourable business climate for remittance-based development.

Akanle and Adesina (2017) investigated the type, amount, and frequency of overseas remittances to households and how they affected the well-being of households in Nigeria using qualitative and quantitative methods. Survey and time-series data were analysed using summary statistics and Ordinary Least Square (OLS) regression. The findings show a favourable correlation between remittances and household welfare. Additionally, they discover that the term "welfare" went beyond assertions that households receiving remittances use the money on consumption. They conclude that the subject has not gotten enough attention.

Data from the 2004 Nigerian National Living Standard Survey (NNLSS) were utilised by Chukwuone *et al*. (2012) to analyse the effect of remittances on poverty in Nigeria. The research employed a multinomial logit model including instrumental variables and the propensity score matching (PSM) approach to calculate the effects of remittances on poverty. These techniques are employed for two different causes. The first step is to account for the selectivity and endogeneity issues. The second is the group that receives remittances (treated) and the other group that does not (untreated). Results indicate that remittances from both domestic and foreign sources are found to lessen the prevalence, intensity, and extent of poverty. Due to internal and external remittances, statistical studies reveal a considerable Average Treatment Effect on the

Treated (ATT). As a result, they conclude that remittances can reduce poverty in Nigeria because they impact it. However, they also advised that this needs further verification using more reliable international remittance statistics.

Apart from the positive effects of remittances found by various studies in the literature, several other studies have also established that, international remittances could have a negative effect on households and on development. For example, utilizing data from the 2013 Nigerian General Household Survey, Urama et al. (2017) studied how remittances to Nigeria affect recipients' labour supply using Propensity Score Matching (PSM) and a Log-Linear regression model. Result indicates that, there is little difference between the mean amount of labour provided weekly by those who get remittances and what they would have provided otherwise for the overall sample. Additionally, the marginal impact analysis demonstrates that the average labour supply for all receivers is inelastic to remittances. Nevertheless, the sub-group study results indicate that remittances have a detrimental impact on the labour supply of the elderly, teenagers, and agricultural self-employed people.

Similarly, Ogunwole (2016) used secondary data from 1981 to 2012 and the cointegration methodology. He used the granger causality pairwise test to determine the long-term relationship between the variables and Two Stage Least Square ("SLS") technique for estimating the impact of the variables on each other. The findings show that although remittances have a beneficial influence on economic growth and consumption, complement broad-based development initiatives well, and paradoxically affect poverty and economic progress, they also have negative consequences due to overdependence. The research calls for the government to implement measures strong enough to neutralise the negative.

2.8 Summary and Gap in Literature

Several theories and empirical works used to explain the concept of remittances and their relation to the welfare of households touching on aspects of migration in developing of countries has been carried out. Still, no one study, or approach has sufficiently demonstrated the exact connection or impact remittances have on the welfare of households. The studies by Chukwuone *et al*. (2012); Iheke (2012); Akanle and Adesina (2017); (Ratha 2013); Ratha (2020) and Arif *et al*. (2019) and many others have establish positive relationships between remittances and households' welfare in

some respects particularly in terms of poverty reduction and consumption. In contrast, other studies on the subjects, such as Ogunwole (2016) and Urama *et al.* (2017) have found that remittances could negatively influence household welfare and development at the national level.

Also, there are resounding theoretical and methodological issues regarding the study and measurement of migration and the associated remittances. On the theoretical front, several of the theories used as a basis for the study of migration and remittances and the welfare of households have been criticised and counter-criticised by researchers in the field. On this account, Poirine (1997) who formulated the 'implicit family loan arrangement' theory believes that his theory is in competition with previous migration and remittances theories such as the "tempered altruistic" theory, and the "implicit co-insurance arrangement" theory of Stark and Stark (1991). Because Stark's implicit co-insurance theory, which explains why emigrants send remittances, has come under fire from critics like Rempel and Lobdell (1978a) for implying that remittances are invested in agricultural production when, in many cases, it has been found that remittances are instead used to finance non-emigrants' consumption or housing costs, Poirine thinks his implicit family loan arrangement approach is superior to Stark'. Poitrine's hypothesis is centred on the supposition that remittances primarily consist of the repayment of an unofficial and implicit loan taken out by emigrants during their youth to secure a better education that will later make them more productive in the "modem" sector, even though there are other perspectives to it.one, compared to previous approaches.

In a more comprehensive conceptual framework of migration and development theory, De Haas (2007b) evaluated a variety of empirical literature on the relationship between remittances and many facets of social development in the developing countries. This uncovered another area of theoretical problem. Although the review concludes that migration and remittances typically form a part of risk-spreading and coinsurance livelihood initiatives implemented by households, and can, directly and indirectly, increase well-being, promote growth in the economy, and lower impoverishment, their implications on inequality are considerably more ambiguous. The study emphasized that the substantial empirical and theoretical developments made over the past several decades point out the underlying heterogeneity of migration-remittance-development relationships as well as their contingencies on both

temporal and spatial scales of evaluation, which should prevent any generalized statements on the subject.

Regarding methodological issues, Adams Jr (2011) analysed fifty (50) empirical studies evaluating the economic effects of foreign remittances on developing countries. The review started by examining the significant methodological issues faced by economic research on remittances. It then looked at the advantages and disadvantages of diverse economic research that examined how remittances in the developing world affect outcomes like poverty, income inequality, education, investment and savings, labour force participation, and economic growth. It concludes that while remittances from abroad often improve health and reduce poverty in developing countries, they can also negatively influence the supply of labour, educational opportunities, and socioeconomic development.

In the study of international remittances and the welfare of households, Orbeta Jr (2008) claims that variations exist in the analytical results. This variation in results, according to the report, can arise due to different conceptualisation and coverage. However, it can also result from different analytical methods, which are only valid under certain presumptions. A typical technique for assessing the effects of migration (or remittances) for migrant and non-migrant families according to Orbeta Jr is comparing means or proportions. The second method involves using instrumental variables (IV) to address the issue of endogeneity, as in McKenzie and Rapoport (2005) and Lokshin *et al*. (2007). Third, experiments conducted naturally, as in Yang (2008b) and Yang and Choi (2007). Fourth, matching in Rosenbaum and Rubin (1985) and fifth, unreported family traits like drive and risk-taking Yang and Choi (2007)

Ivakhnyuk (2006) focused on methods to estimate the number of irregular migrants and amounts of their remittances from Russia. He emphasised distinguishing labour migrants from foreign residents among irregular migrants. He states that the lack of methodological basis for such an analysis prejudices the representativeness of sociological surveys of irregular migrants. This claim applies to all aspects of remittances study to a considerable extent. This study focuses on remittances to households regardless of their sources to overcome the problems encountered in Ivakhnyuk (2006), and bypass measurement problems associated with other previous studies.

Thus, theoretical contentions and methodological concerns remain issues furthering the investigation of the relationships between remittances and the welfare of households in many developing countries and therefore be put in the context of a given analysis or investigation.

2.9 Contribution to the Literature

Previous studies of the connection between remittances and household wellbeing in developing nations have tended to place greater emphasis on macro-level factors including poverty, unemployment, financial development, and general infrastructure. Insufficient consideration has been given to households' economic and social shocks and coping mechanisms in research conducted at the micro-level. Attentions were more on how remittances affect or influence households' consumption behaviour and welfare. No study has sufficiently examined the criterion at which remittances can finance households' non-farm enterprise activities in a developing nation like Nigeria. Research on the impact of remittances on post-shock consumption of households is also lacking, particularly in cases where households are divided based on the severity of their shock experiences (poor harvests, the death of the family's head or breadwinner, or natural disasters like flooding).

Given the role of the internet in the welfare of households in a World driven by increasingly digital dependence, the effect of remittances on the internet access by homes and how it affects their welfare and businesses owned by them are far from adequately explored in previous literature. While research in this aspect is scanty, evidence shows that lack of relevant and reliable household-level data has been a major obstacle cited in most extant empirical literature on the subject. Added to these are methodological problems such as measurement issues and conflicting theories as evidenced by the literature reviewed for this study thus making the debate on the actual impact of remittances on the welfare of households to continue.

To contribute to this debate, this study takes a different approach in its analysis of the connection between foreign remittances receipts by households and its effect on their welfare in the three core aspects of this study. This study therefore contributes to the existing literature in line with the research objectives/ research questions set at the introductory part of this thesis (chapter one):

a. In the study of remittances and households' business capital (non-farm income generating activities) finance, this study contributes by classifying business owned by households in term of quantiles (e.g., q25 and q75) after sorting in terms of the median flow of capital, determine the effect remittances has on each quantile and across quantiles including inter-quantile range. This way, what becomes apparent is the disaggregation of the effect of remittances on capital finance which is now based on the amount of capital required by business shown in chapter four. As demonstrated in chapter four, remittances are positive and very effective as a source of capital finance for a business when the capital need of a business is small. However, when this need (financial capital need) is beyond the medium level, the effect of remittances becomes less and less positive and even become negative.

b. One component of households that has seen extensive research into the effects of remittances is post-shock consumption. However, based on mean (average) examination of the relationship between remittances and the post-shock consumption smoothening of families in Nigeria, it was noted that many analyses reached conclusions of either positive or negative (and in some cases, mixed results). In this part of the analysis, the impact of remittances on families' post-shock consumption coping was investigated using the log-log non-linear regression technique. To test whether there was a difference in means between the groups based on the severity of the shocks they had experienced, families were divided into two groups prior to the application of the procedure. This strategy made it possible to avoid mean (average) analysis, a problem that many previously documented research had. It was found that remittances do not have the same calming effect between households that experienced the most devastating (most severe) kinds of shocks as households that experienced less devastating shock types, according to this new approach to the analysis of post-shock consumption smoothening using remittances. This is another area in which this investigation contributed to the literature.

c. Third, accessing the internet for household use has been a major problem for households to performing welfare enhancing activities such as e-commerce in a digital World. Internet access by most households in developing countries find it very difficult on account of a lack of finance, lack of a well-developed digital infrastructure, poverty, and a host of other factors to perform these value adding functions. Research in this aspect and remittances is limited also due to, among other factors, a lack of adequate

and reliable data in Nigeria as in many developing countries. Using the now available series of waves of the general household survey data 2015/2016, binary response models were constructed, and results indicate that remittances though positive have no effect on the ability of households to access and use the internet.

CHAPTER 3. DATA AND METHODS

3.1 Introduction

This chapter explains the data and the methods used in analysing constructed models in this thesis. In section 3.2, the source of data is briefly stated and majority of the variables that cut across the entire analysis are defined while chapter specific variables are defined in each chapter as are necessary. Section 3.3 discusses the methods of analyses for each chapter specified research objective/ research question.

Additional discussions of chapter-specific analysis are discussed further in each analysis chapter. Section 3.4. concludes the chapter.

3.2 Source of Data and the Definition of Variables

In this study, the World Bank's updated General Household Survey (GHS) public use data for Nigeria for the years 2015–2016 wave 3 (https://doi.org/10.48529/7xmj-q133) and the 2018–2019 wave 4 (https://doi.org/10.48529/1hgw-dq47), accessed through the Bank's microdata library are used. While the first and third research questions in chapters 4 and 6, respectively, were examined using the 2015/2016 dataset, which involved 2637 homes, the second research question in chapter 5—which examined 2345 households—was examined using the 2018/2019 dataset. The Nigerian Bureau of Statistics (NBS) collaborated with the World Bank and other partners on a number of waves of household surveys to produce the dataset. The lack of adequate data points and formation on remittances made it necessary to use the cross-sectional data rather than the entire panel in the waves.

Many of the variables used in the analysis's chapters are common and as such, we have attempted to define them here and justify their inclusion. Additoinal chapter-specific variables are defined in the relevant chapters accordingly as stated earlier. The dataset drew heavily on the Harmonized National Living Standards Survey (HNLSS-a multi-topic household survey). The Nigerian National Bureau of Statistics (NBS) collaborated with the Federal Ministry of Agriculture and Rural Development (FMA&RD), the National Food Reserve Agency (NFRA), the Bill and Melinda Gates Foundation (BMGF), and the World Bank to conduct the study. The poll included 36 states and Abuja, the Federal Capital Territory (FCT). We generated variables from respondents from Enumeration areas (EAs) in urban and rural areas using three separate surveys distributed to homes and the communities. The three instruments designed for the study are the household's questionnaire, the agriculture questionnaire, and the community questionnaire. The questionnaires cover a variety of socioeconomic concerns.

This study takes more interest in the household questionnaire and data. The Household Questionnaire provides information on demographics; education; health (including anthropometric measurement for children and child immunisation); labour and time use; food and non-food expenditure; household nonfarm income-generating

activities; food security and shocks; safety nets; housing conditions; assets; information and communication technology; and other sources of household income such as remittances from relatives abroad. The sample is a two-stage probability sample: In the first stage, the Primary Sampling Units (PSUs) were the Enumeration Areas (EAs).

The design use probability proportional to the size (PPS) of the total EAs in each state and Federal Capital Territory (FCT), Abuja and the total households listed in those EAs. A total of 500 EAs were selected using this method. The second stage was the selection of homes—families are chosen at random using the systematic sample of ten (10) households per EA. The process involved obtaining the total number of households listed in a particular EA and then calculating a Sampling Interval (SI) by dividing the entire homes listed by ten (10). The next step was to generate a random start 'r' from the table of random numbers, which stands as the first selection. Systematic sampling to select households by adding the sampling interval to the unexpected start. Five thousand (5,000) households got interviewed in 500 clusters. Families were not selected using replacement.

Thus, the final number of homes interviewed was slightly less than the 5,000 eligible for interviewing. Households are followed over time to observe changes across time for each family. In the second or post-harvest visit, some homes had moved, as had individuals. Thus, the final number of households with data in both time points (post-planting and post-harvest) is 4,582, with 32,827 household members. The survey classifies households either as urban or rural. In urban centres, families in urban enumeration areas and rural homes in rural areas. Table 3.1 is used to define key variables in this study.

Table 3. 1 Definition of Key Variables

Variable	Definition	Indicator
Financial Capital	This is our response variable in the first analysis chapter. According to Munyegera and Matsumoto (2016), financial capital refers to productive resources such as money, credit, and other forms of funding that build wealth. With access to financial capital, households can fund their business, create wealth, and enhance their welfare. Most studies on remittances find that remittances can providing households with financial capital to set up and operate non-farm income generating activities.	Given the inability of households in Nigeria as in most developing countries to access credit locally and the failure of public support system, many households rely on international remittance receipts as a source for funding their non-farm income generating activities. Financial capital therefore measures financial resource input needed by households to finance their businesses.
Avg. HH consumption exp	Average household consumption expenditure is the variable of interest in the post-shock consumption smoothening analysis in chapter 5. Many authors such as Deaton (2005); Deaton and Grosh (1998); and Grosh and Glewwe (2000) favour consumption expenditure as the best measure of the welfare of households in the literature.	Through dietary intake and other bodybuilding calories, the average household consumption expenditure serves as a barometer for the welfare of households. It has long been regarded as the most accurate indicator of a household's well-being by researchers.

Internet Access	Internet access is the variable of interest in chapter 6. The internet has changed the ways people were doing things: From accessing finance to consumption expenditure (Bakardjieva 2005; Castells 2014; Chen *et al*. 2018). The internet according Schallmo et al. (2018), has enabled digital transformation in every sphere of life across the World and that includes how households access the best possible welfare enhancing activities. However, while there appears to be enough for everyone, not everyone has access. This is because of the difficulties households face in accessing finance locally in developing countries to fund internet access thus looking up to remittances. We seek to determine the effect of international remittances of on households' ability to access and use the internet. The study on the link between remittances (direct data bundles, airtime top-ups) influence households' access and use of the internet for welfare enhancing activities. Previous literature on the subject has remained scanty as we have shown in the literature.	Internet access is a welfare-enhancing platform through which households are expected to benefit from e commerce and other internet enabled activities.
International remittances	Remittance refers to personal remittances comprising personal transfers and compensation of employees earned by migrants in their countries of destinations. Remittances are believed to provide the needed capital	This variable is indicative of households are able to fund their welfare activities using remittances.

	for households to run their businesses in developing countries in the face of no or inadequate funding locally available (Schrieder and Knerr 2000). Remittances is a key independent variable in this analysis. Remittances' impact on financial capital is determined in two folds: When it is the only option available to households to finance their businesses and in relation to other sources of finance options. Again, the effects remittances have on the post-shock consumption of households, and of internet access are evaluated in the 5th and 6th chapters.	
Profits	Profits are one source that families rely on to finance business expansion or start new lines of businesses. Profits, when available, are equally a good source of coping with consumption expenditure after families experience adverse shocks and in accessing the internet. Profits can only be made from trading or enterprise activities by households. The dominant argument concerning profits in the literature is that is a good source of finance for small businesses which are predominantly owned by households.	The dominant argument concerning profits in the literature is that is a good source of finance for small businesses which are predominantly owned by households. Alekseev (2019) argues that due to the complex nature of equity and debt markets, small informal businesses which are predominantly owned by families favour profits for business growth or expansion and for consumption expenditure.
Household characteristics	HC represents the characteristics of the ith household, including household size,	Household characteristics capture the endowments of

(HC) such as education family size, income, savings, age of household head, the ability to read and write, labour hours, and expenditure on education.	income, savings, and expenditure on education of household members that influence a household's economic well-being. For instance, the World Economic Forum WEF (2016) defines "*education as the stock of skills, competencies, and other productivity-enhancing characteristics".* Therefore, education is a variable representing the household's skills. Education attainment, together with other household characteristics such as the nature of the family an individual lives in such as income, household size, and type, are essential in defining access to capital (Basu et al. 2001; Maddox 2007; Lindelow 2008; Psacharopoulos and Patrinos 2018). Household characteristics also define consumption Delgado and Miles (1997); Orden *et al*. (2006), and ability to access the internet (Chaudhuri et al. 2005; Swenson and Ghertner 2020).	the family, which measure the extent of a household's productive capacity and serves as a proxy for permanent income (Olalekan *et al*. 2011; Tebboth *et al.* 2019).
Regular stipends	Regular stipends are periodic income received from friends and relatives by a household for their upkeep. These have been differentiated from remittances in the survey.	Receipt of regular stipends from migrant household members abroad have been found to be another good source of finance for households. It is therefore a measure of how such receipts impact on family welfare.
Raw material	These refer to the cost of raw material input into the business operations,	An indication of the effect of raw material input in

		creation goods and services as well as generating or earning profits
Higher education.	The ratio of family members with higher education in a family. Does higher education mean a family could better access financial capital?	
Registered biz	A registered business is a family that is duly registered with the relevant government agency and recognised by the government. Some family-owned businesses are duly registered or incorporated, most are not and thus unrecognised by the government though they exist. Does business registration enhance access to financial capital? A registered or incorporated enterprise is used as a proxy for complying with legislation and regulation such as paying corporate taxes, PAYE, CGT etc. It also enables businesses to meet some of the requirements required by commercial Banks to access credit for business.	This indicates the legal status of a business.
Rural sector	A household is either located in the urban area or rural area. Urban households have better access to facilities such as electricity, road infrastructure and even facilities. Is there any difference among urban and rural households in accessing financial capital for their businesses?	An indication whether a household is domiciled in the rural area or not and their ability to access finance for household activities.

In a developing country, domestic sources through which households could access finance other than banks and the government include income from employment. Employment income is one of them, but it is not the only one. We also have savings, regular receipts of stipends and rental income as defined in the table above. Earnings or income earned by families is essential for households to mobilise savings (Gupta 1970; Gibson *et al.* 2010; Brenke and Pfannkuche 2018). Savings are part of income not spent on consumption. Household savings enable households to meet the equity requirements of banks for borrowing and may provide direct capital finance for non-farm business start-ups for poor rural families, help in funding post-shock consumption expenditure and to finance internet access. Savings generated through employment income can also enable households to acquire other family assets besides business finance. Given these definitions, we developed the employment income and savings variables from the respondents' responses to specific questions in the survey.

3.3 Methods of Analysis

Three models based on appropriateness and plausible assumptions, one for each research objective, have been developed/ adopted. The first analysis chapter employs the quantile regression estimation technique in chapter four. Chapter five identifies two groups of households based on the severity of shock they experienced. We used the Ordinary Least Square (OLS) in analysing their consumption coping measures due to shock after testing for significance between the means of the two groups or categories (Symbolically, mean diff = Mean(a) – Mean(b) = 0)' given the vector of shocks coping measures. To analyse the effects of remittances on households' connecting to and using the internet, we deploy the Probit regression model, augmented by logistic regression in chapter six. We briefly explain the different models and their appropriateness in each chapter's analysis below.

3.3.1 Quantile Regression.

Quantiles are points in a distribution that relates to the rank order of values in that distribution with limits of minimum and maximum values. We regard points between the boundaries as percentiles or other quantiles depending on the study's objective. Koenker and Bassett (1978) introduced the concept of Quantile Regression (QR). The method fits specified percentiles of the response's percentile, such as the 25th and

90th percentiles, and can potentially describe the entire conditional distribution of a response variable. Since introducing this concept, many researchers have adopted it in various fields due to its usefulness in determining distributional effects. For example, (Davino et al. 2014) highlights that quantile regression enables the detection of more results in analysis than conventional procedures would. The study stresses that because QR does not focus on the conditional mean, it is possible to approximate the entire conditional distribution of a response variable. See also for relevance, the recent reviews by (Coad and Rao 2006; Hao et al. 2007; Tansel and Bodur 2012; Koenker 2017; Lin and Benjamin 2017).

I express quantiles of the observable independent variables as functions of the response variable for any point of interest in the distribution of a response variable. Quantiles of the conditional distribution of independent variables are functions of observable variables for any point of interest in the distribution of a variable. This technique is common in applications in theoretical studies. Extant literature establishes that this method allows one to study the conditional distribution of Y on X at various locations and thus offers a global view of the interrelations between Y and X. (Younas, 2016; Bhattacharya, 2019; and Gimenes and Guerre, 2021). The report demonstrated that the non-parametric approach is flexible and less subject to functional form misspecification.

According to Rodriquez (2017), quantile regression is a valuable method for identifying more useful predictive relationships between variables when there is no or only a weak relationship between the means of such variables (Hunter and Lange 2000; Chen and Chalhoub-Deville 2014). The model goes beyond linear regressions and becomes especially useful when the conditions of linear specifications are not satisfied (Kneib 2013; Arellano and Bonhomme 2017). Compared to other techniques such as OLS and other parametric tests, quantile regression became appropriate in this aspect of the analysis because we want to determine the value or threshold at which international remittance receipts are effective in household-owned businesses' financial capital. Findings of most previous studies generalise those remittances are either effective or ineffective in providing financial means for businesses without much recourse to at what threshold of financial capital requirement are remittances effective (Boly *et al.* 2014; Djido and Shiferaw 2018; Misati *et al.* 2019).

Rodriguez believe that the increasing complexity of data in research and business analytics necessitates the versatile, robust, and scalable development of explanatory and predictive statistical models. The study shows that quantile regression meets these requirements by fitting conditional quantiles of the response with a general linear model that assumes a nonparametric form for the conditional distribution of the response variable. See also (Chaudhuri and Loh 2002; Huang et al. 2017; Bergherr 2018). In addition to the above features of QR, we have used the quantile regression technique based on several factors to assess the influence of international remittances and other explanatory variables on financial capital (y1).

1. We believe that the allocation of the financial capital of households may change in any respect that an examination of averages might not reveal and may thus give a misleading picture. In this analysis, instead of looking at the mean, we are more interested in capital distribution amongst household-owned businesses and how international remittances affect this distribution. Besides, (Frolic 2010) demonstrates that applied economists and policymakers are increasingly interested in distributional effects of variables of interest. The most straightforward instance in which quantile regressions are helpful is when data contains outliers (as in this case). The analysis also demonstrates that extreme values have a significantly smaller impact on the median value than on the mean value. The QR approach can also detect heterogeneous variables' that have implications for the variables.

2. Apart from producing information that one would not obtain directly from standard regression methods; quantile regression yields valuable insights into applications and can model the entire conditional distribution. Arising from (a) above, fitting a linear regression using parametric or similar models which assume a parametric form and give the interpretation of a model for the conditional mean of Y on X will be inappropriate. Parametric tests do not capture the conditional variance Var(Y|X), much less the conditional distribution of Y given X (Rodriguez 2017).

3. As observed from table 4.1 in chapter four, the mean value of capital is 213,090, and the median value is just 38,000, which indicates that the median is far below the mean with as much as 175,090 (213,090 – 38,000). Also, the minimum value of 700 and a maximum of 2,500,000 indicate a case of extreme (Flom 2018), and it relies on assumptions that are often not met (Neal and Simons 2007; Assaf and Tsionas 2020).

The concept of quantiles incorporates the framework of general linear models to fit specified percentiles of the response variable (Yi), such as the 25th and 75th percentile, and be able to explain the entire conditional distribution of the response. We recall that the standard regression equation is of the below form:

$$y_1 = \beta_0 + \beta_{1x_i1\ldots\ldots} + \beta_{px_{ip}} + E_i, \qquad i = 1, \ldots\ldots, p \ldots\ldots \quad (3.1.1)$$

Where Y is a continuous variable (one that can have any value between two numbers), and X can be either completely continuous, dichotomous (dummy variables), or both (Krzanowski 1983; Morales et al. 1998; Newsom 2013). In other words, Y_1 is continuous for the ith observation, and the predictors xi1; Xin denote main effects, which make up continuous or categorical variables and their interactions or built effects (Jöreskog et al. 2001; Su et al. 2012).

In practice, the least-square regression for a response Y and a predictor X predicts the conditional mean E[Y|], but not the conditional variance Var[Y|X] or the conditional distribution of Y given X (Shmueli et al. 2011; Fumo and Biswas 2015).The quantile level is the probability (or the proportion of the population) that is associated with a quantile. Symbolically, we state the expression as follows:

$$Qr(y_{1\,}) = \beta_{0(r)} + \beta_{1(r)x_i1\ldots\ldots\ldots} + \beta_{p(r)x_{ip}}, \quad i = 1, ., p \ldots\ldots\ldots (3.1.2)$$

To estimate the $\beta'_{j(r)}$s, we solve the minimization problem stated in equation 4 below.

$min: \beta_{0(r)} - \beta_{p(r)} \sum_{i=1}^{n} + Pr(y_i) - \beta_{0(r)} - \sum_{j=1}^{p} xij\ \beta(r)$ ..... (3.1.3)

where $Pr(r) = r$ max $(r, 0)$ + (1-r)max(-r, 0).

Therefore, the solution to the minimisation problem yields a distinct set of regression coefficients for each quantile level. This expression corresponds to median regression and 2s the absolute value of the QR function.

The implication is that for each range or value of remittances received by a household and used as financial capital for their business, we want to determine the quantum of remittances receipt that is sufficient or significant to function as capital for a business owned by a household.

3.3.2 The Ordinary Least Square Estimation Technique

The Ordinary Least Squares (OLS) estimator, sometimes also referred to as the Classical Linear Regression Model (CLRM), is the estimation technique used to analyse the second objective of this study. That is, to analyse the effect of remittances on the post-shock consumption of households that have experienced shocks. This OLS procedure is the most used for regression analysis in many fields of empirical studies such as economics, political science, and electrical engineering. According to Constable and Constable (2004); Astiz et al. (2000) and Stigler (1981), the OLS was independently developed by a mathematician called Gauss in 1975, Legendre (1805), and according to Dutka (1990), also by Adrian in 1808 and published in the first decade of the nineteenth century. The approach estimates the unknown population parameters in a linear regression model using a sample.

In other words, since the Population Regression Function (PRF) in a two-variable scenario given by

$$Y_1 = +\beta_1 + \beta_2 Xi + U_{\text{i}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2.1)$$

cannot be observed directly, it is estimated from the Sample Regression Function (SRF) given as.

$$\hat{Y}_1 = \hat{\beta}_1 + \hat{\beta}_2 Xi + \hat{U}_i \ldots\ldots\ldots\ldots\ldots\ldots (3.2.2)$$

$$= \hat{Y}_i + \hat{U}_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2.3)$$

$\hat{Y}_i$ is the estimated (conditional mean) value of Yi and the $\hat{U}_i$ are the residuals. See (Gujarati 2003).

The objective is to reduce or minimise the discrepancies between the answers anticipated by the linear approximation of the data and the observations gathered in arbitrary datasets (Gitzen and Millspaugh 2003). The total of the squared distances, measured perpendicular to the axis of the response variable, between each data point in the set and its corresponding point on the regression plane is what we refer to as the sum of squared distances; the fewer the variances, the greater the model fits (Bedini *et al*. 1996).

To understand the Gauss Markov theorem better, we summarize its assumptions or below.

3.3.2.1 The Gauss Markov Theorem (GMT)

Vinod (2022) claims that the Gauss-Markov theorem (GMT), which has been around for about a century, shows that the Ordinary Least Squares (OLS) estimator or sample mean is the best (efficient) linear unbiased estimator with the lowest variance (BLUE). Hansen (2022) states that, according to the BLUE theorem, the sample mean having the lowest variance (best) linear unbiased estimator of a population expectation is the best estimator.

The concept of linearity in statistical analysis means that when a set of predictors (independent variables) are linear, the value of the mean of the outcome variable's (dependent variable's) for each increment of the independent variables follow a straight line which implies measuring a-straight relationship depicted with a straight-line connecting X and Y. The proof of this theorem can be found in many standard econometric textbooks such as (Baum 2006; Gujarati et al. 2012; Wooldridge 2015).

I therefore did not attempt to show proof of the theorem. However, I have summarized its key assumptions below.

Recalling equation (3.3.1), the OLS equation is:

$$y_1 = \beta_0 + \beta_{1x_i1\ldots\ldots} + \beta_{px_{ip}} + E_i, \qquad i = 1, \ldots\ldots, p \ldots\ldots\ldots\ldots \quad (3.2.1)$$

and the $\beta_{j's}$ are estimated by solving the least-least minimization problem as stated in equation (3.2.2) below.

$$min: \beta_0 - \sum_{i=1}^{n} Pr\,(\mathrm{y_i}) - \beta_{0(r)} - \sum_{j=1}^{p} Xij\beta j)^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3.2.2)$$

We seek the values of the β's that minimise the residual sum of squares from equation (3.2.2). We present estimates for β's (the population) based on our sample data, where the projected values of the curve are those that reduce the total of the squared deviations from the observations (minimum variance). The goal here is to average out unbiased estimates.

However, to do this, we must meet its assumptions by applying the least square method. Summarised below are the basic assumptions.

a. The regression model is linear in the coefficients and the error term. That is:

$$y_{t=}\beta_1 + \beta_{2xt} + et.$$

b. The expected value of the error term has a population mean equal to zero.

$$E[et] = 0 \Leftrightarrow [yt] = \beta_1 + \beta_{2xt}$$

Assumption (b) means that for the model to be unbiased, the average value of the error term must equal zero).

c. Another condition is that the independent variables are uncorrelated with the error term. That is $var(et) = o^2 = var(y_t)$

d. The method also requires that Observations of the error term are uncorrelated with each other. We symbolically express this as $cov(ei, ej) = cov(yi, yj) = 0$

e. The error term should have constant variance (a case of no heteroscedasticity) and,

f. No independent variable is a perfect linear function of other explanatory variables.

That is e_t~N(0, $\sigma^2 \Leftrightarrow y_t$ ~N[(β_(1)+ β_(2x_t)),σ^2]

Meeting the above assumptions will produce the best possible estimates (see Iyoha, 2004 p).

Non-Linearity

Sometimes, variables present non-linear characteristics relationships in their distribution when inspected for features in parametric analysis because what constitutes a dependent variable (y) and the explanatory variables X_1, X_2, ……. X_n. are unrestricted. When this happens, we consider non-linear models in their estimation. Since non-linear models apply to non-linear relationships, we cannot assume non-linear relationships in the parameters of the variables, as is mainly the

case in OLS estimation. However, non-linear relationships can be cast in the linear (in parameters) mode.

3.3.3 Probit and Logistic Regression

We designed a probit model reinforced by the logit model to analyse the impact of remittances on household internet access. Several other methods can estimate qualitative response models. An example is the Laser model used by Adams & Cuecuecha (2013) in analysing the expenditure pattern of remittance-receiving and non-receiving households in Ghana. However, the probit regression model is deemed more appropriate to our case because it involves non-linear estimation. Using OLS, conditional probabilities are more likely to lie outside the (0,1) range. Therefore, the conditional probabilities would lie between 0 and 1.

3.3.3.1 Probit Regression

The probit model uses the cumulative distribution function of the standard normal distribution to define f (*) (Horowitz and Savin 2001; Eugene et al. 2002). We could extend the model to account for error variances that aren't constant (known as heteroscedasticity). The model can be developed to account for non-homogeneity of conflict, defined as the absence of homoscedasticity when violated (non-homogeneity of variance) according to (Brotchie 2021). The absence of homoscedasticity is defined as the failure of the constant variance assumption (non-homogeneity of variance). Binary response models are non-normal, mainly when dealing with small samples (Horowitz 1992). Also, the error terms of binary response models tend to exhibit heteroscedasticity, resulting in a bias in the standard errors and hence could invalidate inference(Salisu 2016)

The response variable internet access is nominal and takes on the value of one (1) if a respondent has access to the internet and zero (0) otherwise and hence the appropriateness of Probit.

In some previous studies, researchers have established that remittances can improve aspects of households' welfare such as poverty, health, and education (Mazzucato and Schans 2011; Zhunio et al. 2012; Chong and Bani 2018). The objective here is to determine the probability that remittances can positively influence households to connect to and utilise the internet, which is another critical aspect of household well-being under researched as shown in the literature review chapter.

An essential characteristic of the probit model is that it uses the Maximum Likelihood Estimator (MLE). The MLE makes it possible to apply QR in the case of few observations or many observations, unlike, for example, the Minimum X² Estimator, which can only be effective when there are many observations per cell (Iyoha, 2004).

The probit regression model gives us the below expression.

$$\Pr(Y = 1|X = \Phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots \ldots \beta_k X_k \quad (3.3.1)$$

Which defines the conditional probability of $Y = 1$ (that is, the probability of Y occurring) given X. To represent this in a more compact form, we rewrite equation (3.3.1) in a more matrix form as:

$$(Y = 1|X) = \Phi(X\beta) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.3.2)$$

As mentioned earlier, Y is a dichotomous (nominal) variable with only two categories or levels (0,1). Hence, the cumulative standard normal distribution function $\Phi(X\beta)$, which ranges from zero to one as:

$$\Phi(X\beta) = \frac{1}{\sqrt{2\pi exp exp}}\left(\frac{Z^2}{2}\right) \partial z \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.3.3)$$

Although equation (3.3.3) looks like the typical linear regression model, the interest variable Y (i.e., outcome variable) is dichotomous or binary. We equate Z to $X\beta$ (i.e., Z = $X\beta$).

Hence, the conventional Ordinary Least Squares (OLS) cannot be employed here since the function is a nonlinear function of $X\beta$. The appropriate alternative estimator is the maximum likelihood estimator (MLE). Pr denotes the probability that an event will occur. As a result, the standard normal curve area from 0 to 1 determines the likelihood of households linking to and utilising the internet. The meaning is that E(Y ıXí) gives the probability of a family having access to the internet and whose access is driven by international remittances (X), among other regressors (Weisstein 2002; Iyoha 2004).

The probit model accommodates dummy regressors as well. According to (Alekseev 2019), there are three critical parameters of interest when using the probit regression model: the Z-score, the marginal effects, and the conditional probabilities. The Z-score, the value of the normal distribution, can be computed for individual variables

and the overall model. As shown in chapter six, it indicates whether the Z-score favouring the variable(s) of interest or model will increase. The marginal effects measure the change in the probability that Y occurs for a unit change in the variable of interest.

3.3.3.2 Logistic Regression

According to Cokluk (2010), logistic regression analysis can focus on classifying individuals into diverse groups. The logit model also enables us to estimate categorical variables with the help of a group of variables (Dixon 2021). Unlike the probit regression, it uses the logistic distribution Just, which uses the normal distribution (Salisu 2016) and presents more detail on variations for multicategory outcomes (Pampel 2021; Cho et al. 2022). Like the Probit, the logit model is also a nonlinear function, and hence, OLS is not suitable in its estimation. The errors follow the standard logistic distribution and the Maximum Likelihood as its estimator, just like the probit model.

We recall equations (3.3.1) and (3.3.2) as a general binary response model as below:

$$\Pr\,(Y = 1|X = \Phi(\beta_0 + \beta_1 X_1 + \beta^2 X_2 + \cdots \ldots .. \beta_{\mathrm{k}} X_{\mathrm{k}} \ldots\ldots\ldots\ldots \text{(3.4.1)}$$

and $$Pr\,(Y = 1|X) = \Phi(X\beta) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3.4.2)$$

and given the definition of the conditional probability of the interest variable (Y), for the logit model, the $\Phi(X\beta)$ is given as:

$$\Phi(X\beta) = \frac{exp exp\,(X\beta)}{1 + \exp(X\beta)} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.4.3)}$$

Equation (3.4.3) expresses the cumulative (logistic) distribution function (CDF), and it ranges between zero and one for all values of (X).

In applying the logistic model, the odds ratios, the log odds, marginal effects, and conditional probabilities are the parameters we are interested in estimating. The odd percentages represent the probability of Y=1 to the likelihood of Y= 0 while we obtain the log odds by taking the natural log of the odds ratio. The marginal effects measure the change in the probability of Y=1 because of a unit change in a particular explanatory variable, while the conditional probabilities are previously defined. (We discuss these concepts in greater depth in chapter six).

3.3.4 The Maximum-likelihood Estimator (MLE)

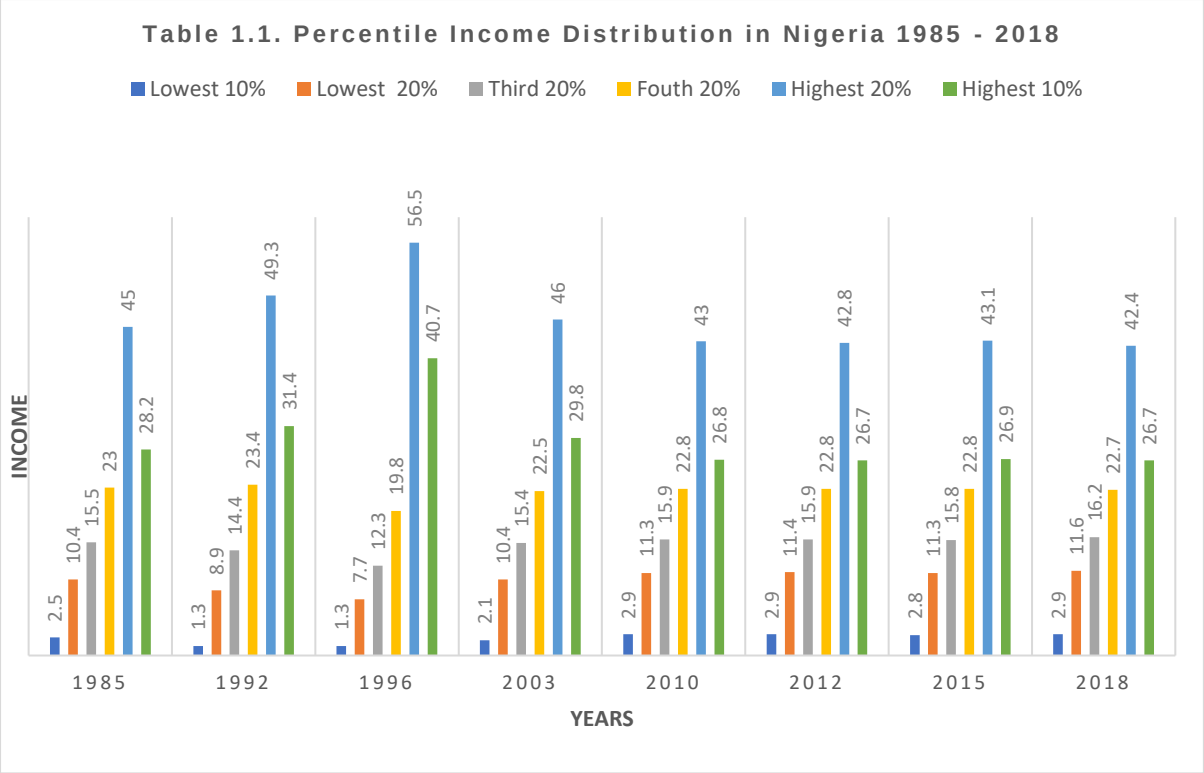
The principle of Maximum Likelihood (ML) has broad applicability. It is a method used to estimate the parameters of an assumed statistical likelihood function given a set of data. It determines which value of β maximises the probability of observing the given sample (Harville 1977; Snijders et al. 2010). The maximum likelihood is intuitive and flexible and estimates the parameter space points that maximise the likelihood function (Brooks-Bartlett 2018). The purpose of maximum likelihood estimation is to make the best decision possible about the population and the joint likelihood function of the random variables is most probable to have created the sample., which is not necessarily independent and identically distributed (dei Congressi 2015; Bartik and Rinz 2018).

CHAPTER 4. A QUANTILE ANALYSIS OF THE EFFECTS OF REMITTANCES ON HOUSEHOLDS' FINANCIAL CAPITAL

4.1. Introduction

This chapter contributes primarily to the literature by estimating a quantile model to determine the threshold at which foreign remittances can effectively provide financial capital for households-owned non-farm income-generating activities (non-farm businesses) in Nigeria. Undertaking this study has become necessary given the increasing remittances flow to Low- and Medium-Income Countries (LMICs) and Nigeria in particular, as shown by the World-Bank (2019) and Ratha (2020). The World Bank has determined that remittances flow to LMICs now exceed total development assistance and are substantially more widespread than cyclical private credit and equity flows, as was noted in chapter one of this thesis. In 2018 alone, the Bank confirms that remittances to LMICs totalled $526 billion, of which Nigeria got roughly $25 billion, which accounts for about 6% of her GDP. Meanwhile, households are still unable to finance their non-farm companies. The assertions made in the literature that remittances can give families that need money for their non-farm enterprises' financial support are thus called into question thus forming one of the central concerns of this investigation.

In other words, the inability of families and businesses to access sufficient capital for their operations contrasts with notable findings in the literature that remittances can offer households an alternative source of finance when they cannot get them within the domestic financial system. The enhanced remittances flow to the country as recorded by the World Bank may have benefited the nation at the macro level, but the impact at the family level is hard to notice. As discussed in the literature review chapter, the huge remittance receipts have not positively shifted the income distribution curve in favour of the poor. For instance, table 1.1 here reproduced indicates that for almost forty (40) years) the income distribution structure has remained largely skewed to the advantage of the highest 20^{th} percentile of the population whose income constituted 56.5% of all income in 1996 down from 45 in 1985. As of 2018, income that accrued to this class slightly reduced to 42.4%. In comparison, income that accrued to the lowest 20^{th} percentile which was 10.4% in 1985 nose-dived to 7.7% in 1996 and slightly moved to 11.6% in 2018. The high degree of inequality in income distribution is therefore a major factor why many households rely on remittances and other sources to finance their businesses.



Source: Researcher's Computation Using Data from the World Bank 2019

A lack of finance is detrimental to businesses and the welfare of families who own them, which extends to the entire economy (Aminu and Shariff 2014; Adebowale 2017; Owoeye 2019). As a result, many households-owned enterprises are folding up while already low-income families continue to slip deeper into poverty. The studies by Dimova and Adebowale (2018), Banerji *et al.* (2016), and Kaba and Moustapha (2021) list several factors while families still struggle to finance their businesses.

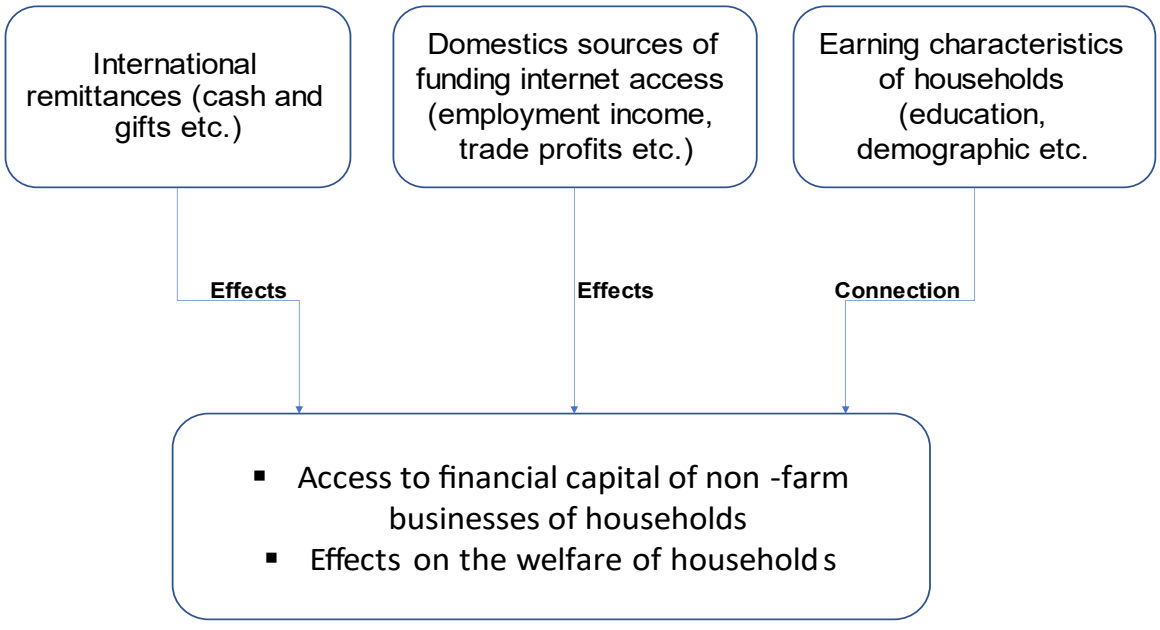
There are two distinct arguments in the literature on the relationship between remittances and the financial capital of household enterprises: Remittances can support households' enterprises and improve their well-being (Adams and Cuecuecha 2010; Fromentin 2017; Lubambu 2014). The studies by Nagarajan (2009); Amponsah and Garcia-Fuentes (2016); and Murakami *et al*. (2021) present opposing arguments that remittances cannot support households' enterprises and improve their well-being but would instead make them lazy in the long run, among other adverse effects. We believe that this is the first-time a method of determining the relationship between international remittances and the financial capital of businesses owned by households in the context of a developing country.

The second contribution of this chapter is that the study establishes that using quantile analysis which is a non-parametric test enables the fitting of specified percentiles of the response's percentile, such as the 25th, 75th and 95th percentiles, and thus, able to describe and interpret its entire conditional distribution relative to remittances as a source of financial capital compared to against mean results as demonstrated in this analysis.

4.1.1 Conceptual Framework

Developed below is the research framework that guided me in exploring the first objective/ research question stated in chapter one, which is to determine the impact remittances have on the financial capital of families engaged in non-farm Income Generating Activities (IGA). The framework is subdivided into three sources and highlights the factors or variables that have been identified based on the objective that could instantiate changes in financial capital: International sources made up of cash and gift remittances; Domestic sources comprising profits from business undertakings, Bank loans, rental income; and Household characteristics such as education, size and labour hours that could affect the earning skills of household members.

Fig. 4. 1 Conceptual Framework Linking Remittances to Households Financial Capital



Source: Author's Conceptual Framework

The framework in Fig. 4.1 breaks down the funding options for household businesses in our dataset into three categories: foreign remittances (foreign sources), domestic sources (such as income and profits), and household characteristics (such as education and demography) that affect access to capital. The conceptualisation also shows how remittances ultimately impact household welfare.

4.1. 2 Research Question and Test of Hypothesis

One of the objectives of this study as outlined at introduction is to determine the threshold of financial capital at which international remittances impact the non-farm Income Generating Activities (IGA) of households. For which, the below research question was developed as shown in 4.1.2.1

4.1.2.1 Research Question

The target of this aspect of the analysis to determine the link between international remittances and the distribution of financial capital employed in the businesses owned by households. To explore this, the below research question is posed:

What is the quantum of financial capital at which remittance receipts are practical as a source of business finance for households?

Constructed in 4.1.2.2 below is a test of hypothesis to help explore the research question aimed at achieving the set objective.

4.1.2.2 Hypothesis

Remittances have no effect on the quantile distribution of the financial capital of household-owned firms.

The remaining part of this chapter is structured as follows: Section 4.2 provides a literature review, and section 4.3 describes the data and variables used in the analysis. It also contains the technique used in the study and model specification. Results are presented in section 4.4, while section 4.5 discusses findings and concludes with some recommendations in section 4.6.

4.2 Literature Review

This part begins with discussing the idea of financial capital for a business highlighting the effects of a lack of it on non-farm firms of families and highlights the challenges

households confront in attaining it. Selected theories and ideas of capital financing are presented and discussed next including the framework of remittances as a potential source of capital financing for households. An in-depth survey is taken at the main theoretical foundations for remittance sending for business finance purposes. This will enable us to understand better the incentives for migrants transferring money to families and identified gaps in the literature via a summary. The review concludes with an evaluation of the government's initiatives to make finance available to families and microbusinesses and why they largely failed followed.

4.2.1 The Concept of Financial Capital.

The concept of capital has various definitions and meanings attached to it. Many writers view capital as any non-financial asset used to produce goods and services. Braun (2017) states that capital is the financial value of assets held in liquid form (funds). He stressed that capital is a tangible asset (machinery and equipment) used to produce goods in economics. In essence, financial capital refers to the factors of production used to create goods that are not part of the production process. (Parkin 2012) believe that we produce goods and services using capital that economists call factors of production grouped into land labour, capital, and entrepreneurship. According to the authors, we refer to shares and bonds as capital in everyday language, but they are not. They are called financial capital.

Financial capital plays a significant role in enabling businesses to borrow funds to buy capital (assets) used for production. In addition, individuals use financial capital to invest in companies to grow and increase revenue. Economists thus distinguish between physical capital and financial capital. They conclude that financial capital is not a factor of production. Ng Fat *et al.* (2021) Kelly sees financial capital as money, credit, and other forms of funding that build wealth. The report categorises financial capital into debt, equity, and speciality, which forms the capital structure of a company - The accounting perspective. From the accounting perspective, we should consider financial capital as equity. Equity capital includes money from the sale of stocks or bonds, or it can consist of any money from private investments by business owners and debts.

As a result of depreciation, tangible physical assets subject to depreciation are not capital but fixed assets. Since we use financial means to acquire material assets to

create new wealth, access to it can improve the welfare of households through the wealth creation process. We can generate equity through savings and borrowings. Equity and borrowing are complex for many low-income families due to bad credit profiles and other factors which poses several limitations of their financial and collateral abilities. This inability means that mobilising savings (given the savings-investment relationship) to push households' wealth creation is hindered by a lack of sufficient access to finance within the financial system of most developing economies because of the many obstacles we have discussed earlier. Thus, the lack of or inadequacy of financial capital could spell doom for families willing to enhance their earnings through business undertakings.

If we pose the question, why is it essential for households to have access to financial capital? According to Wimboh et al. (2009), families can impact the whole economy. Their ability to influence the economy is partly due to their size, extensive exposure to the financial sector, and involvement in monetary and financial stability. The study emphasises the role of households in resource allocation and their saving and spending behaviour, which impacts market prices and well-being. Access to adequate finance will affect households' ability to create wealth, thus making them a key sector in devising development policies. For example, Haggblade et al. (2009) employed the pull and push factors framework to analyse the rural non-farm economy's growth and poverty reduction possibilities in developing countries' non-farm activities that make up a large part of the rural economy. The report indicates that rural non-farm activities, which they defined as all activities other than primary agricultural production in areas outside of cities, generate around 35 per cent of rural household incomes in Africa and 50 per cent in Asia and Latin America. The study by Bwalya Umar *et al.* (2022) on power shedding on categories of homes in Zambia and its effects on the economy is another example that illustrates the power of households in influencing an economy.

4.2.2 Theories of Capital Financing

Romano et al. (2001) contend that financial theories fall short of fully explaining financial behaviour, even though multiple hypotheses have been offered to explain the various capital funding options available to enterprises in general. As a result, scholars have developed numerous theories throughout the years to describe how small

businesses obtain outside capital. However, it is essential that a brief mention of some of these theories be discussed here. The Modigliani and Miller (1958) “cost of capital, corporation finance and the theory of investment” and the “capital structure theory” proposed by Harris and Raviv (1991) are relevant ones to this analysis. They are therefore discussed in some details below. However, recognising that businesses owned by households, particularly in developing countries fall under the small and medium enterprises (SMEs) definitions, ideas that are novel to SMEs on how they access and raise financial capital are discussed to provide specific household context to the analysis. Some of the SMEs financing principles discussed include the theory of the firm, the human capital theory, business plan, equity contribution, osusu (thrift) financing (native to Nigeria), and remittances finance.

i. **The Cost of Capital, Corporation Finance, and the Theory of Investment.** According to Modigliani and Miller's theory, capital is "the cost of capital" to a firm in a world where money is used to buy assets whose returns are uncertain and where capital can be raised through a variety of media, from pure loans, which symbolises money-fixed claims, to pure stock offerings, which only give owners a right to a proportionate share of the uncertain business. The theory demonstrated, however, that the course that such theories must follow by demonstrating the circumstances in which capital structure is, is irrelevant.

ii. **Capital Structure Theory**. The Harris and Raviv's capital structure framework which has its roots in the Modigliani and Miller's hypothesis believe that businesses with higher liquidation values, such as the ones with physical assets and/or businesses that have lower inquiry costs, will incur a greater debt burden and be prone to default but will also have greater value in the market than businesses with similar characteristics but the lesser value at liquidation and/or greater scrutiny costs. Harris and Raviv contend, among other things, that more leverage might be anticipated to be associated with greater business value, higher debt levels in comparison to predicted income, and a reduced likelihood of reorganisation after default. According to the idea, the best capital structure is chosen by balancing the advantages of debt in avoiding investments in projects with declining value against the disadvantages of debt in prohibiting investments in projects with rising worth.

iii. Human capital theory and Small Business financing.

The human capital concept was first proposed by Smith (1952), but it was expanded upon and made well-known by Rosen (1989) and Becker (2009). According to the human capital principle, everyone has a distinct set of skills or abilities that they may enhance or add to through training and education. According to Matano and Ramos (2018), It represents the marketable skills of workers as a necessary form of capital in any organisation. According to Unger et al. (2011) and Brüderl *et al.* (1992), when the concept of human capital is applied to Small and Medium Enterprises, which have many household owners, the general presumption is that the founder's human capital increases the likelihood of small firms' survival notwithstanding the methodological issues involve in the measurement of its returns.

According to Abdesamed and Abd Wahab (2014), a common element of SMEs is their owner-manager nature of many. Typical of household businesses, the same people own and run most of them. Large businesses, however, are often run by experts chosen by the organisations' shareholders. Therefore, the traits of owner-managers include their degree of training and expertise and ability to obtain financing from outside sources. This thus places the characteristics of family-owned business as a source of business finance in most developing economies. However, in the developing World, the characteristics of businesses may not attract financing form Banks as it were because the system is frustrated with lack of trust and insincerity and might not be a strong factor in attracting finance.

iv. Financing SMEs Through Business plans.

Authors such as Mazzarol *et al*. (2009) contend that in the business plan approach, owner-managers use business plans as instruments to accomplish both short- and long-term financing since they are situational and adaptive. A business plan if properly used is an essential instrument for requesting and receiving formal external financing is a business plan. Business owners can share their plans with potential investors or different credit organisations, including banks, who could be prepared to lend money for business purposes based on the verifiable worthiness of the plans. Unfortunately, most small firms find it challenging to create a clear and convincing plans to draw in outside funding (Romano *et al.* 2001) and this might be one of the causes Olawale and Garwe (2010), who, with a focus on South Africa, assert that the majority of new SMEs fail, with an average failure rate of around 75%, one of the highest

rates worldwide.. Thus inability to get financing through official means, Abdesamed and Abd Wahab (2014) claims, may lead small business owners to rely on family loans for funding.

v. Equity contribution financing of SMEs.

Given the unreliableness of many EMEs, Agyapong (2012) argues that debt or equity sources, or a combination of the two, are the main ways for SMEs to get funding from Banks. The business owner may typically rely on personal savings from prior employment, gifts from friends and family, or even remittances from abroad to raise equity. The study argues further that venture capital funds and shares are another option open to small businesses. In an ideal world, business owners would solely rely on such a source. However, in most cases, these cash might not be sufficient, forcing them to turn to debt or borrowing.

vi. Esusu (informal thrift) financing.

Ibitoye (2018) asserts that the informal financial firms, have become more important over time in most developing nations as Nigeria because commercial Banks are unable to provide funds for the poor segment of the population (to which most households belong), which makes up most of the total population. These unregulated lending firms include credit associations (Esusu), daily contribution programmes, traders' clubs, to collaborative savings and finance societies. They offer funding services in order that address the needs of those taking out loans quickly with minimal to no oversight and boundaries on the uses that the loans may be put.

vii. **The Remittances Framework for Capital Finance.**

In chapter three, I reviewed several theories concerning the study of remittances and households' financial capital. Some of those theories are referred to here to re-establish a framework linked to this aspect of the research. The theories include but are not limited to the idea of capital accumulation, the altruistic theory, and the prospect theory, among others. However, while the many approaches may overlap, this study adopts the Altruistic theoretical views developed by Comte (1858) and its modification known as the tempered altruism and implicit contractual hypotheses suggested by (Lucas and Stark 1985).

According to the notion of altruism, migrants are driven to send money home rather than simply doing so. Most people would prefer to remit, according to the charitable argument. According to the altruistic theory, family members have an obligation to

support one another according to Stark and Lucas (1988) and Stark (1999) which explains why migrants make recurrent decisions. According to the idea, migrants will be willing to transfer resources to make up for the consumption or investment shortages caused by family members' lower incomes. Many of the followers of the altruistic view contend that people have a moral duty to put others' needs ahead of their own (Opong 2012).

The 'implicit family loan arrangement' idea developed by Poirine (1997) serves as a foundation for the examination of remittances and household welfare. Even though there are other perspectives to it, Poitrine's hypothesis is based on the supposition that remittances primarily consist of the repayment of an unofficial and implicit loan taken out by emigrants during their youth to secure a better education that will later make them more productive in the "modem" sector in comparison with previous approaches. The claim is that as migrants' abilities improve, so do their earning potential in their new countries, which would ultimately enable them to complete their implicit loan commitments to send a larger percentage of their income to household members who remain behind. The remaining household members can then utilise the receipts to finance their own enterprises.

Poirine thinks that the "tempered altruistic" theory and the "implicit co-insurance arrangement" hypothesis of Stark and Stark (1991) are in rivalry with his formulation in terms of migration and remittances. Poirine believes his implicit household loan setup position is superior to Stark's since Stark's inherent coinsurance principle, which explains why emigrants transmit remittances, has been scholars like Rempel and Lobdell (1978a) for suggesting that remittances are being invested in farming when, in numerous instances, it was discovered that remittances receipts are instead utilized for funding non-emigrants' usage on costs related to housing. Contributing to the remittances-business finance connection, Martinez *et al*. (2015) investigated 48 developing countries using institutional and transaction cost theories and came to the conclusion that informality shifts migrant remittances towards venture financing due to weak institutional capacity to observe and manage the financial system, which prevents inflows of foreign capital necessary for starting investment. The discouragement from using formal agreements encouraged households to rely more on the personal remittances that migrants send back home.

As evidenced from the above theoretical review, the failure of the domestic financial system to sufficiently address the financial capital needs of businesses and households in the country, encourage families to rely on remittances which, according to Opong (2012) include personal remittances and all types of money transfers which do not involve formal contracts to fund their businesses' financial capital needs. According to the study, all types of money transfers that do not involve formal contracts and, therefore, are unlikely to be recorded in national accounts but are made through other channels such as friends, relatives or oneself, personal couriers and returnee migrants, yet, provide a valuable source of finance for businesses owned by households. Opong (2012) classified the formal channels of migrant remittances as including transfer services offered by banks, post offices, non-bank financial institutions and money transfer operators.

Ratha (2013) argues that migrant remittances provide an economic lifeline and are the largest source of foreign exchange in many countries, especially poor or conflict-affected countries, providing critical support to their balance of payments. Anderson and Alem and Andersson (2019) corroborate Ratha's view and show that receiving international remittances increases the value of private domestic inter-household transfers, whereas receiving domestic remittances does not have any effect.

In line with the theory of altruism, financially well-off household members send regular stipends to family members who are not fortunate enough financially for their upkeep and medical care other than international remittances. In Nigeria, as in many developing countries, such monies could help households to start and operate their non-farm businesses and thus constitute a good source of business finance for families.

4.2.3 Government Efforts in Addressing the Problem of Lack of Access to Capital by Households

Given the difficulties poor households face in accessing credit, the Government has initiated a series of policies and programmes to address the situation. Among them is the National Employment Policy (NEP) review in 2017 in collaboration with the International Labour Organisation (ILO) and other partners. According to the Minister of Labour and Productivity, the revised National Employment Policy, Dr Chris N.

Ngige, is in harmony with the Government's Economic Growth and Recovery Plan (ERGP) and seeks to ensure policy coherence amongst different existing mutually reinforcing policy documents in Nigeria. Although the policies and programmes are numerous. Some of the programmes bearing relevance to the objective of this chapter are discussed.

On the demand side of labour and productivity factors, the NEP names economic growth, industrial development, and the availability of credit facilities and entrepreneurship as conditions for change that could stimulate production/economic activities. Meeting the requirements for change would generate employment as firms/industries would require additional labour to expand output and promote entrepreneurial and creative spirit to create new employment opportunities, especially in the private sector. NEP aimed to execute programmes that would generate employment by improving access to finance for new and current small and medium businesses and developing entrepreneurial and business skills of women and youths in the formal and informal labour markets that households dominate to achieve its objectives. However, a review of macro and sector policies and strategies of the NEP document by the International Labour Organisation (ILO) identifies the prohibitive cost of finance as a limiting factor against business development. In other words, despite the excellent policy on paper, lack of finance has remained a substantial binding constraint for households interested in non-farm businesses.

The Central Bank of Nigeria established the Micro, Small and Medium Enterprises Development Fund (MSMEDF) in 2013 with a take-off seed capital of N220 billion to make loans available to the people. The fund has two components: commercial and developmental components. MSMEDF's developmental functions and mandate of creating a robust financial system were part of its mandate. The Apex Bank acknowledged that characterising the sub-sector is a huge financing gap that hinders MSMEs' development. Thus, its main objective in setting up the fund was to channel low return funds to the MSME sub-sector of the Nigerian economy through Participating Financial Institutions (PFIs) and enhance access by MSMEs in the microenterprises such as agricultural value chain, cottage industries, artisans' services, renewable energy/ energy efficient product and technologies, trade, and general commerce. Most businesses owned and managed by households fall within

the above division. It thus seems that access to capital finance by families in need of start-ups and working capital for their businesses would be a lot easier.

However, to be eligible to access the fund, recourse is made to the Microfinance Policy, Regulatory and Supervisory Framework for Nigeria (MPRSF) 2005. The 2005 policy framework was revised in 2011 and recognised that a large chunk of the population is un-served by the existing credit institutions (Deposit money Banks and Development Banks). This recognition corroborates the EFInA (2008) findings in its access to finance survey in Nigeria that 79 per cent of the total population in Nigeria is unbanked, out of which 86 per cent are rural dwellers. However, interested businesses and individuals can only access the fund through Deposit Money Banks (DMBs), Development Finance Institutions (DFIs), Microfinance Banks (MFBs) and NGO-MFIs) collectively known as Participating Financial Institution (PFI).

Accessing the fund through banks again boils down to the bottlenecks in the traditional banking structure in the country that has made it exceedingly difficult and impossible in some cases for poor households to access credit and has thus widened financial exclusion. Because the programme was unsustainable, the increased loan disbursement and improvements in agricultural production and other activities were short-lived. There is, as a result, a policy gap in this arrangement.

Although the CBN's actions improved family companies' ability to obtain credit, empirical data has demonstrated that such government fiat intervention is not sustainable. The classical supply-led, subsidized by the government credit approach targeted at the agricultural sector and non-farming activities like trading, tailoring, and weaving, blacksmithing, agribusiness processing, and transportation has been adopted by microfinance services, primarily those sponsored by the government, according to Babajide *et al*. (2017). The structure, according to Baker (1992); and Taufiq (2014) is flawed, and the government should instead focus on policies that increase industry competition rather than directly providing social services. Another explanation for the huddling households having to go through the intermediary institutions is understandable.

The literature suggests that access to microfinance correlates with increased household income and consumption levels, less severe income inequality, and improved welfare Beck *et al*. (2009), Ouma *et al*. (2017) and Ozoh *et al*. (2022) all viewed that microfinancing is a crucial tool for the economic empowerment of vulnerable households and, if poorly handled, might be disastrous. See also for relevance the works of (Zaman 2004; Miled *et al*. 2022).

It follows that lack of finance will make wealth creation activities of households ineffective and thus, be unable to access capital through microfinancing. Other government efforts over the years in tackling the shortage of credit to families and small businesses include a framework for Non-Interest Financial Institutions (NIFIs) in June 2011, introduced by the CBN and granted two preliminary licences as of end-December 2011. Potential customers have hitherto steered away from the organised conventional financial services to their aversion to interest and interest-based products.

Another programme option considered by the CBN to make credit more accessible to households is Islamic Banking. This specialised form of banking would further deepen Nigeria's financial market. According to Kama and Adigun (2013), the apex bank hoped that Islamic bank products would help bring many of the country's population into the banking sector. As evidenced by the growth in international Sukuk, Kama and Adigun believed that the financial intelligence agency would aid in luring FDI from the Middle East and Southeast Asia, where many investors have money available to invest in Shari'ah-compliant financial products, potentially fostering growth in the nation's real estate sector.

Abdullahi *et al*. (2015) highlighted prior government efforts in making finance affordable to households, including the rural banking programme, sectoral credit allocation, a concessionary interest rate, and the agricultural credit guarantee funds scheme. Other institutional arrangements include establishing the Nigeria Agricultural and Cooperative Bank Ltd (NACB), the National Directorate of Employment (NDE).
The Nigeria Agricultural Insurance Corporation (NAIC), the Peoples Bank of Nigeria (PBN), Community Banks (CBs), and the Family Economic Advancement Programme (FEAP) are all part of the Nigeria Agricultural Insurance Corporation (NAIC) (FEAP).

To improve agricultural funding, the Government merged the NACB with the PBN and the FEAP in 2000 to form the Nigeria Agricultural Cooperative and Rural Development Bank LTD (NACRDB). It also established the National Poverty Eradication Programme (NAPEP), which aims to provide financial services to poor people (Adekeye, 1988). Despite these high laws and programmes, many households interested in non-farm income businesses cannot obtain enough financing, relying on remittances for capital.

Successes and Failures of the Programmes

Without a doubt, despite continued efforts, there have been some programmatic triumphs. For instance, using information from the World Bank Enterprise Survey for Nigeria, Raimi and Uzodinma (2020) investigated the effect of the Central Bank of Nigeria's (CBN) development fund effort on access to credit for Micro, Small and Medium (MSM) enterprises. The main conclusions show that the Micro, Small and Medium Enterprise Development Fund (MSMEDF) had a favourable impact on businesses' ability to acquire bank loans. The plan is thought to have boosted the incidence of loans being taken out by businesses during the study period, according to the report's results.

Despite the gains recorded in establishing the various programmes by the government to tackle the problem of lack of adequate finance access, majority of households still find it extremely difficult to access finance while some of the programmes failed to sufficiently address the problem due to a variety of factors. For instance, Akinbode and Imhonopi (2019), evaluated the impact of micro, small, and medium-sized enterprises (MSMEs) on employment generation in Kwara State, Nigeria, by gathering data from 72 owners, managers, and persons in charge of human resource/administration of selected MSMEs, and discovered that the MSMEs in Kwara State are not well-positioned to generate the required level of employment for the people due to poor level of MSMEs growth and inconsistent government policies.

The findings of Akinbode and Imhonopi (2019) regarding uneven government policies are in line with the recommendations made in the (Eze *et al*. 2010) research, which advises against support organisations (public or private) giving SMEs general support. Instead, business support should use industry diversity and growth potential as the foundation for determining how to target and assist SMEs. Nweke *et al*. (2022)

investigate the fiscal policies and interventions made by the central bank of Nigeria (CBN) for the MSME sector and discover that several interventions for insufficient funding and an enabling business funding environment have not been sufficiently communicated to the MSME operators. Some of the issues preventing economic growth were shown to be the strict loan acquisition standards and controls utilised by loan intermediaries. The study also discovered that a significant obstacle to the expansion of the Nigerian economy is the eventual lack of enough capital for MSME. According to the study by Page and Okeke (2019) corruption in government agencies and programmes designed to aid MSMEs is the biggest issue facing Nigeria's small- and medium-sized firms. The biggest economy and most crucial nation from a strategic standpoint in Africa are both negatively impacted by this corruption, which has become routine and pervasive according to the report.

4.2.4 Empirical Literature

Because of the importance of remittances in the welfare of households and the development of Low and Medium Countries, several empirical studies exist on the impact of international remittances on households' financial capital (Fromentin 2017; Djido and Shiferaw 2018; Alem and Andersson 2019). To examine the impact of international migration and remittances on poverty in the developing world, (Adams and Page 2005, pp 1645) posed the question 'Do international migration and remittances reduce poverty in the developing Countries'? They attempted the question by assembling migration and remittances data on 71 Low Income and Middle-Income developing countries from 1980. Given the data problem, they got data on the stock of migrants for each country from records of labour receiving countries who kept accurate records of migrants' influx that they produce. Second, they got IMF data on official workers' remittance flows, i.e., remittance monies transmitted through official banking channels.

Adam and Page used the basic growth-poverty model formulated by Ravallion and Chen (1997) was used to analyse the study’s constructed models. They employed the published results of the household budget surveys of the sampled countries. The investigation discovered that both foreign migration and remittances have a significant impact on poverty reduction in developing countries, with a 10% increase in international migrants in a country's population resulting in a 2.1% decrease in poverty

in the proportion of people living on less than $1.00 per person each day. This discovery implies that they cannot rule out the possibility that variations in poverty in developing countries cause changes in the proportion of migrants going to work abroad and the level of official international remittances sent home. As a result, the authors conclude that international migration and remittances might be endogenous to poverty which many households in developing countries suffer from.

In a related study, Ambrosius and Cuecuecha (2016) employed Mexican 2002/ 2005 household survey data to investigate the effect of remittances on formal and informal services to determine whether remittances positively impact access to and the use of credit or finance. The study used the baseline model using an instrumental strategy and found that: 1. Remittances influence the ownership of savings accounts and deposits; 2. could not find that remittances facilitate borrowings from formal financial institutions; and 3. There is a causal effect of remittances on borrowing from informal sources. According to the report, the impact of remittances on borrowing is driven by informal finance rather than by traditional bank loans. This discovery points to the deficiencies of the formal financial sector in addressing the financial capital needs of households. The fact that the formal financial sector cannot handle the financial needs of remittance-receiving families further stretches the debate on how best to deploy remittances to be more beneficial to households.

Djido and Shiferaw (2018) use the Living Standards Measurement Study-Integrated Survey data on Agriculture (LSMS-ISA) panel data for Nigeria (2010/11 and 2012/13) and Uganda (2009/10, 2010/11, 2011/12) to study the pattern of labour productivity and income diversification in Uganda and Nigeria. They constructed a measure of labour productivity as the ratio of the returns to family labour and land (value of farm production minus the operating cost of production). Also, the percentage of the returns to family labour and returns to capital (sum of wage labour and profit from operating an enterprise) to that of total labour input. Two indicators: High-value agriculture and non-farm activities, were used to construct the income diversification model estimated using the Seemingly Unrelated Regression (SUR) to measure the two countries' high-value agriculture and non-farm activities.

The study's findings show that one measure of the labour productivity gap confirms the emerging consensus that labour productivity needs to include better estimates of

the intensity of the labour used across economic activities and account for labour inputs to separate productivity gaps from employment gaps. Djido and Shiferaw's findings also indicate a strong association between labour productivity and income diversification in any given sector. The potential trade-offs in labour productivity growth between farm and non-farm sectors suggest that research and policy should identify barriers to diversification and aid pathways to financial sustainability that will raise labour production and income in agricultural and non-agricultural sectors.

Aside from the favourable impact of remittances on family economic capital found in the literature, some reports found that remittances can adversely impact a family's financial access and cause sectoral imbalances, harming the economy (Zhang *et al.* 2021). Another good example is Hossain (2015) who discovered that with 'bad leadership,' remittances significantly reduce public expenditure on education and health in recipient nations and significantly worsen poverty in developing countries. Several other studies, such as Lei and Desai (2021), found that low remittances drive the negative health impact on wives left behind by emigrated husbands in India, affecting overall household welfare finance. See studies by Murakami *et al*. (2021); Ojapinwa (2021) with similar findings. Specifically, Murakami et al. discovered that remittances could reduce labour supply in sending countries, while Ojapinwa found that remittances harm growth.

The study by Djido and Shiferaw was the closest attempt to link remittances to households' wealth creation ability through accessing financial capital. However, the study paid less attention to the threshold at which remittances may become effective providing capital to households needing capital finance for their businesses. Other studies that focused on Nigeria include Akanle and Adesina (2017), which examined the welfare effects of remittances on households against the increasing trend of out-migration. The study used primary and secondary data through quantitative and qualitative (interviews and observation) between 2015 and 2016. Both remittance-receiving and non-remittance receiving households took part in the survey. The study adopted the multivariate regression analysis. Findings showed a positive relationship between remittances and household welfare with more robust expenditure patterns. The findings for the analysis indicate that significant proportions of remittances sent to families are used for productive purposes like establishing businesses and building

houses. However, the study failed to say at what level of financial capital households can use remittances to finance setting up and operating a business.

Fonta *et al*. (2015), examined how Nigerian households typically utilise the large remittances inflows they receive from abroad. The study used a dataset involving 697 end-users of remittances collected at money transfer operators (MTOs) between March 2011 and December 2012. Collected data were analysed using tables and charts. The main conclusion is that remittances flowing into Nigeria are spent by households on consumption, education and health, accounting for over 74.3 per cent of the total inflows. The study argues that since these categories of expenses have positive multiplier effects on the local economy and human capital accumulation over time, remittances positively contribute to national development in Nigeria. The studies by Chowdhury (2014), Iheke (2012), and Chukwuone et al. (2012) on the subject have similar results.

4.2.5 Summary of Review and Gap in Literature

Relevant material from the literature has been reviewed in relation to how important remittances are for households' access to capital. The study emphasises that there has been no resolution to the controversy. All the extant theories on capital financing failed to adequately provide a solution to the problem of financial capital access by households in developing countries for several reasons. For example, Modigliani and Miller (1958) cost of capital, corporation finance, and the theory of investment as well as the capital structure theory developed by Harris and Raviv (1991) implicitly exclude small business financing from their analyses concentrating rather on big business finance with well-defined capital structure which most small businesses usually owned by households lack. The findings from the review are in line with Romano *et al.* (2001) contention that contend that financial theories fall short of fully explaining financial behaviour, even though multiple hypotheses have been offered to explain the various capital funding options available to enterprises in general.

In addition, even the small businesses related theories and concepts such as the human capital theory and small business financing, financing SMEs through business plans, the equity contribution financing of SMEs and Esusu (informal thrift) financing native to Nigeria all have their major short comings. For instance, the human capital principle of Rosen (1989) and Becker (2009), which focuses on the skills or abilities of individuals acquired through

training and education do not necessarily enhance access to capital finance in Nigeria as in many other developing countries as Banks and other financiers may not recognise skill sets as any worth of capital lending. For the informal thrift idea (Esusu), security and safety of contributions may not be guaranteed due to fraudulent activities. These short comings thus make migration a popular choice of financing households' businesses. Coupled with other factors, the aim to remittances thus act as motivation for out-country migration.

Concerning the remittances business finance idea, the actual impact of remittances on the financial capital of households have also remained inconclusive. For example, the Fromentin (2017)'s study on the subject concentrated on financial development and remained speculative about its effects on developing countries and how households could access finance. Findings from the study support the view of the possibility of remitted funds not being primarily targeted at financial investments or savings but are sent specifically for consumption purposes. Also, Adams and Page (2005) acknowledged that the level of remittances recorded by the IMF underestimates the actual level of remittance monies returning to labour exporting Countries. Haggblade et al. (2010) whose study concludes that 35-50% of rural households' income comes from non-farm earnings as noted above, did not substantiate this with any empirical testing. In addition, the leaning was towards setting up entities where household members could take up employment instead of setting up or managing their businesses.

The potential trade-offs in labour productivity growth between farm and non-farm sectors suggest that research and policy should identify barriers and support pathways to income diversification to raise labour productivity and incomes in non-agricultural agriculture sectors. Djido and Shiferaw (2018) used household-level survey data to analyse the pattern of labour productivity and income diversification in Uganda and Nigeria, confirming that a positive relationship exists between labour productivity and diversification of income to a given sector. However, the study did not suggest any insights how to achieve it the absence of households being unable to access financial capital.

This study, therefore, aims to discover new evidence on the impact of remittances on the financial capital of households-owned businesses non-farm in Nigeria. Using quantiles is an alternative view to many studies in the literature that consider the effect of remittances' influence on business finance at the conditional mean level.

4.3 Data and Methods

Data on 2637 Nigerian households that own non-farm income generating activities (businesses) and received remittances from abroad is used to determine the effect of remittances on their business financial capital. Quantile regression is the main method employed in the analysis. The inclusion of Ordinary Least Square (OLS) also called mean regression is used mainly for comparative purposes.

4.3.1 Data Source and Variables

Data is obtained from the World Bank's General Household Survey (GHS) 2015/2016 wave 3 for Nigeria, as mentioned in chapter three. I constructed GVs (Generated Variables) using various Stata commands from the .dta files and employed in the analysis. The variables have been carefully created based on the available information and responses contained in the longitudinal dataset and where their representative-enough data points. International remittances are a significant variable used in determining the behaviour of financial capital in the study. Included as regressors in the analysis are other sources of finance available to households based on theoretical underpinnings and for which there are data points in the survey. The aim is to ascertain at which threshold of financial capital can remittances significantly influence financial capital compared with other sources of finance open to households for their non-farm businesses. Variables in the study reflect the characteristics of households in the region, and they are included to make for a more robust analysis.

The variable of interest in this analysis is the natural logarithm of financial capital. The natural logarithm of financial capital has been constructed from the responses to survey questions by respondents who own non-farm income-generating activities in the country and receive international remittances as mentioned earlier. In this study, households that do receive remittances from abroad are excluded because the focus of the is to determine what effect remittances has on the financial capital of households.

4.3.2 Summary Statistics

Presented in table 4.1 is the summary statistics of the variables used in the analysis.

Table 4. 1 Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Dependent Variable					
Financial Capital	2,637	10.49005	1.814487	0.693147	17.72753
Independent variables					
International remittances	2,637	0.4173832	2.126768	0	15.06847
Profits	2,637	9.262384	1.940462	0	15.15051
Loans	2,637	0.6251434	2.470382	0	14.50866
Education expenses	2,637	3.605382	4.919054	0	14.36363
Regular income	2,637	0.447638	2.228979	0	16.65318
Ratio of hh internet Access	2,637	0.1418309	0.2240454	0	1
Age of household head	2,637	51.58058	13.61541	16	103
Literate hh members	2,637	0.5041932	0.299001	0	1
Ratio of hh members with higher education	2,637	0.3267737	0.2801391	0	1
Size of a household	2,637	7.521426	3.55106	1	34
Ratio of hh members who own mobile phones	2,637	0.3274913	0.2581115	0	1
Ratio of labour hours	2,637	9.421814	9.459088	0	91
Registered Non-farm IGA	2,637	0.0754645	0.2641895	0	1
Rural Sector	2,637	0.6166098	0.4863043	0	1

Source: Author's Computation Using World Bank GHS survey for Nigeria 2015/2016

Table 4.1 highlights some essential characteristics concerning the values of the variables used in this analysis. First, the number of observations is 2637 households with non-farm income-generating activities. This figure comprises 1,011 (38.3%) urban and 1,626 (61.7%) rural households (0.6166098*2637/2637), as shown by their respective mean multiplied by the number of observations. Furthermore, our variable of interest (log of financial capital) has a mean value of 10.49005, a minimum of 0.693147 and a maximum value of 17.72753 after transforming it due to its extreme values or outliers. International remittances and other monetary variables show a similar trend and have been subjected to the same treatment to bring them to levels.

Household size ranges from one (1) to thirty-four (34), with an average family size higher than seven. About half of families in this analysis are literate (i.e., defined as

being able to read and write), and the average ratio of household members having access to the internet is 0.1418309 (about 14.18%), while the mean of family members who own at least a mobile device is 0.3274913 (32.7%). This implies that 18.52% (32.7-14.18) % of mobile phone owners cannot access the internet on the face value of the summary statistics displayed in Table 4.1.

Registered Non-farm Income Generating Activities (IGA) is used as a proxy for government/ regulatory compliance for businesses. The tabulation shows that 0nly about 7.5% of non-farm businesses owned by households are following regulation. Average age of a household is about 51 years with a minimum age of 16 and a maximum of 103 years.

4.3.3 Methodology

This study uses the Quantile Regression (QR) estimation technique. Adopting the QR model, which is non-parametric compared with a parametric model such as the Ordinary Least Square (OLS), has become necessary for this objective because of the shortcomings of parametric tests. According to Asmare and Andualem (2018), this method necessitates model specification and differentiating randomness from true inefficiency which is often difficult in most contexts. For instance, a single large outlier can significantly impact OLS results with small samples. In addition, Frost (2020) has demonstrated that apart from being insensitive to outliers and multicollinearity, linear functions imply a linear function of the input variables and are prone to overfitting. A model is called linear if the linearity is in the parameters and it may or may not be linear in the input variables. Where is also linear in the variables, it can therefore, not accommodate non-linear interactions because both the parameters and the input variables are linear thus making a non-linear specification (such as QR) desirable (Kelejian 1971). As mentioned earlier, the estimation of an OLS equation in this analysis is mainly for comparative purposes as earlier stated and to test the claim.

Quantiles are points in a distribution related to the rank order of values with minimum and maximum values limits. Points between the boundaries are percentiles or other quantiles depending on the study's objective. The concept of Quantile Regression (QR) introduced by Koenker and Bassett (1978) fits specified percentiles of the response, such as the 25th and 75th percentiles. It can potentially describe the entire conditional distribution of a response variable. Quantiles compared to a parametric

test or linear analysis with their restrictive assumptions could produce misleading or spurious results. Parametric analyses would fail to account for the heterogeneity of the distribution of financial capital of businesses owned by households in this case.

Thus, QR will make us better understand remittances' effects on the distribution of households' financial capital. Davino et al. (2014) highlight that quantile regression detects more effects in analysis than conventional procedures would. It has been demonstrated that mean or linear functions can be complex because it restricts exclusively to a specific location of the Y conditional distribution (Gujarati 2003; Davino et al. 2014).

Under the quantile estimation, the pseudo-R^2, also known as the Likelihood Ratio Index (LRI), introduced by McFadden (1973), rather than the traditional R^2 is used to determine the degree of overall significance in the model for the quantile estimations. The pseudo-R^2 is the percentage of the latent variable's variation explained by covariates (Hu et al. 2006). In contrast to the usual R^2, which must be higher to be considered a good fit in some cases, a McFadden ratio of 0.2 to 0.4 suggests an excellent or exceptional model fit (Gujarati and Porter 2003; Ozili 2022).

4.3.4 Model Specification

First, the OLS model is specified and estimated after cleaning the data to satisfy its assumption. The functional f(•) form of our economic model is specified as:

$$Infcapitali = \beta_0 + \beta_1 Intotremi + \beta_2 Inprofitsi \ldots\ldots\ldots \beta_n \rho_i \ldots (4.1)$$

And its econometrics form is written as:

$$Infcapitali = \beta_0 + \beta_1 Intotremi + \beta_2 Inprofitsi \ldots\ldots\ldots \beta_n \rho_i + \cdots . ei \ldots (4.1a)$$

β_0 is the intercept, and β_1 to β_n are the other parameters to be estimated while ei is the error term. The objective is to find the conditional mean of Y given the values of X. The OLS estimate for regression coefficients provides us with the best linear unbiased estimate (BLUE) feasible if its assumptions are met, according to the Gauss Markov theorem according to Goldberger (1991) states that, under certain conditions, the

ordinary least squares estimate for regression coefficients gives you the best linear unbiased estimate (BLUE) possible. The assumption includes having the lowest sampling variance among the class of linear unbiased estimators. If the errors in the linear regression model are uncorrelated, have equal variances, and have an expected value of zero ((Gujarati 2003; Cameron 2010). We have not bothered to show proof of meeting the assumptions because the emphasis is on quantile analysis. However, we have cleaned and transformed our data to ensure the major assumptions of OLS are not violated as shown by the preliminary tests conducted prior to estimation.

The quantile regression model takes a similar structure to the linear regression model specified in equation 4.1. Following the work of Ebru (2012), the quantile equation is defined in its general form as follows.

$$Q_{\mathrm{r}}(yi) = \beta_{\mathrm{o}}(\tau) + \beta_1(\tau)xi_1 + \cdots . \beta_{\mathrm{p}}(\tau)xi_{\mathrm{p}} \quad i = 1, \ldots . n \qquad \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.2)$$

Where:
p is equal to the number of features in the equation.
n is the number of data points, and
r equals the ith quantile.
Equation 4.2 means that QR will let us have various average effects anywhere along the distribution of the dependent variable (in this case, financial capital). Not the mean as in the case of OLS, but the forecast of Y given the supplied values of X at the specified quantiles. The QR structure implies that one is not limited to just finding the mean but can calculate any quantile (τth quantile or (percentage). It also means that instead of being constants, the beta (β) coefficients are now functioning with a dependency on the quantile (Dye 2020).

Davino et al. (2014) have shown that when the response variable is log-transformed, the quantile regression equation is also transforming; the equation becomes essential and stated as follows:

$$Q_{\mathrm{r}}[log(X)\ ] = log\ [Q_{\mathrm{r}}(X)]$$

$$Q_{\mathrm{r}}[log(X)\ ] = X'\beta r$$

$$Q_{\mathrm{r}}(X) = exp[\mathrm{Q}r(X)]$$

$$exp[\mathrm{Q}r(X)] = exp\ \exp(X'\beta r)\ ..(4.3)$$

And the marginal effect in y levels is given as:

$$\partial q_{\mathrm{r}}\ (\mathrm{y}|\mathrm{X})/\ \partial xj = \exp(X'\beta r)Q_{\mathrm{r}}j\ \ldots\ldots\ldots\ldots\ (4.4)$$

Given the observed cases of skewness of our variable of interest, which is financial capital, and of the monetary covariates necessitating transformation, our interpretation of the coefficients of regression results is done using elasticities. Elasticities measure the response of one economic variable to a change in another. Rather than being measured in units, we expressed and interpreted them as percentages. A log-log model is created when both a dependent and an independent variable are log-transformed (Cox 2004; Gujarati et al. 2012). The log-log model presupposes that the variables' observation points have no negative values. We attach appropriate weights to negative numbers to make them positive. When the coefficient of an independent variable is multiplied by 100, the result is a percentage (Wooldridge, 2004).
Because we transform the predicted, but the covariates are not, this will help avoid exponentiating the coefficients to determine how changes in the predictors will affect the expected.

Two models, each with two equations, have been formulated. **Model 1** considers international remittances as the only source of financial capital for households alongside the earning characteristics of families; **model 2** incorporates domestic sources of financial capital for families in addition to remittances.

Model 1.

The first equation in this model is specified as below.

$$Q_{\mathrm{r}}(fin_{cap}) = \beta_0 + \beta_1 r(Remittances)\ \beta_2 r(r\_interacc) +$$
$$\beta_3 r(agehhead)\ + \beta_4 r(r\_literate)\ \beta_5 r(r\_higheredu) + \beta_6 r(hhsize) + \beta_7 r(\mathrm{r\_mobilephone})$$
$$+\beta_8 r(r\_labhrs)\ + \beta_9 r(\mathrm{regIGA}) + \beta_{10} r(\mathrm{rsector}) \quad \ldots\ldots\ldots\ldots\ (4.5)$$

Where:

fin_{cap} = the value of financial capital of households owned non-farm income generating activities.

$remittances$ = value of international remittances receipts.

$r\_interacc$ = a dummy variable for internet access by households.

$agehhead$= age of the head of a household.

$r\_literate$ = a ratio that measures whether a household member is literate or not.

$r\_higheredu$= the ratio of household members with higher education equivalent to Nigerian certificate of education or above.

$hhsize$ = size of a household.

$r\_mobilephone$ = the ratio of household members that own mobile phones or similar digital devices.

r_labhrs = ratio of labour hours worked by households in relation to available labour hours to the household.

$regIGA$ = a dummy that assumes 1 if a non-farm business of a household is registered with the appropriate government agency.

$rsector$ = a dummy that assumes 1 if a non-farm business of a household is situated in the rural area.

The βs are parameters (true βs) to be estimated at the specified quantiles of interest: the 25th, 50th, 75th and 95th quantiles and on *apriori*, the signs of the parameters are expected to be positive apart from *hhsize*.

I have added an interactive component to equation 4.5 to specify the second equation in 4.6. Including the interactive term enables us to understand better the connection between remittance receipts and rural families deemed to encounter the most difficulty accessing financial capital in many developing countries.

$$Q_{\mathrm{r}}(fin_{cap}) = \beta_0 + \beta_1 r(Remittances)\ \beta_2 r(r\_interacc) + \beta_3 r(agehhead) + \beta_4 r(r\_literate)\ \beta_5 r(r\_higheredu) + \beta_6 r(hhsize) + \beta_7 r(\mathrm{r\_mobilephone}) + \beta_8 r(r\_labhrs) + \beta_9 r(\mathrm{regIGA}) + \beta_{10} r(\mathrm{rsector}) + \beta_{11} r(Remittances * \mathrm{rsector}) \ldots\ldots\ldots (4.6).$$

All variables remain as previously defined.

Model 2

To account for local sources of finance, equations 4.5 and 4.6 are modified to produce equations 4.7 and 4.8 respectively as follows:

$$Q_r(fin_{cap}) = \beta_0 + \beta_1 r(remittances) + \beta_2 r(profits) + \beta_3 r(loans) + \beta_4 r(eduexp) + \beta_5 r(regularY) + \beta_6 (r\_interacc) + \beta_7 r(agehhead) + \beta_8 r(r\_literate)\ \beta_9 r(r\_higheredu) + \beta_{10} r(hhsize) + \beta_{11} r(\text{r\_mobilephone}) + \beta_{12} r(r\_labhrs) + \beta_{13} r(\text{regIGA}) + \beta_{14} r(\text{rsector}) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.7)$$

and,

$$Q_r(fin_{cap}) = \beta_0 + \beta_1 r(remittances) + \beta_2 r(profits) + \beta_3 r(loans) + \beta_4 r(eduexp) + \beta_5 r(regularY) + \beta_6 (r\_interacc) + \beta_7 r(agehhead) + \beta_8 r(r\_literate)\ \beta_9 r(r\_higheredu) + \beta_{10} r(hhsize) + \beta_{11} r(\text{r\_mobilephone}) + \beta_{12} r(r\_labhrs) + \beta_{13} r(\text{regIGA}) + \beta_{14} r(\text{rsector}) + \beta_{15} r(\text{remittances*rsector}) \ldots. \quad (4.8)$$

A preliminary examination of the outcome variable (financial capital) displayed the presence of outliers and skewness (fig. 4.2), necessitating its transformation (fig.4.3).

Fig. 4. 1 Symmetrical Distribution of the Dependent Variable (Financial Capital)

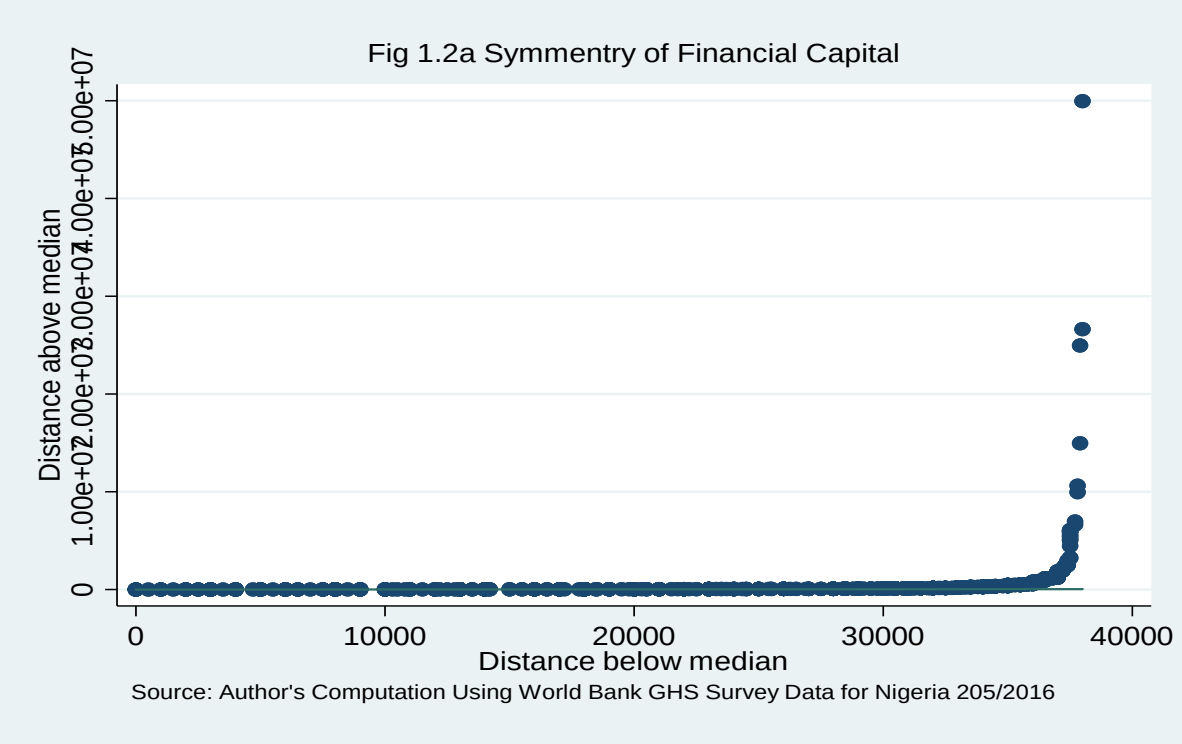
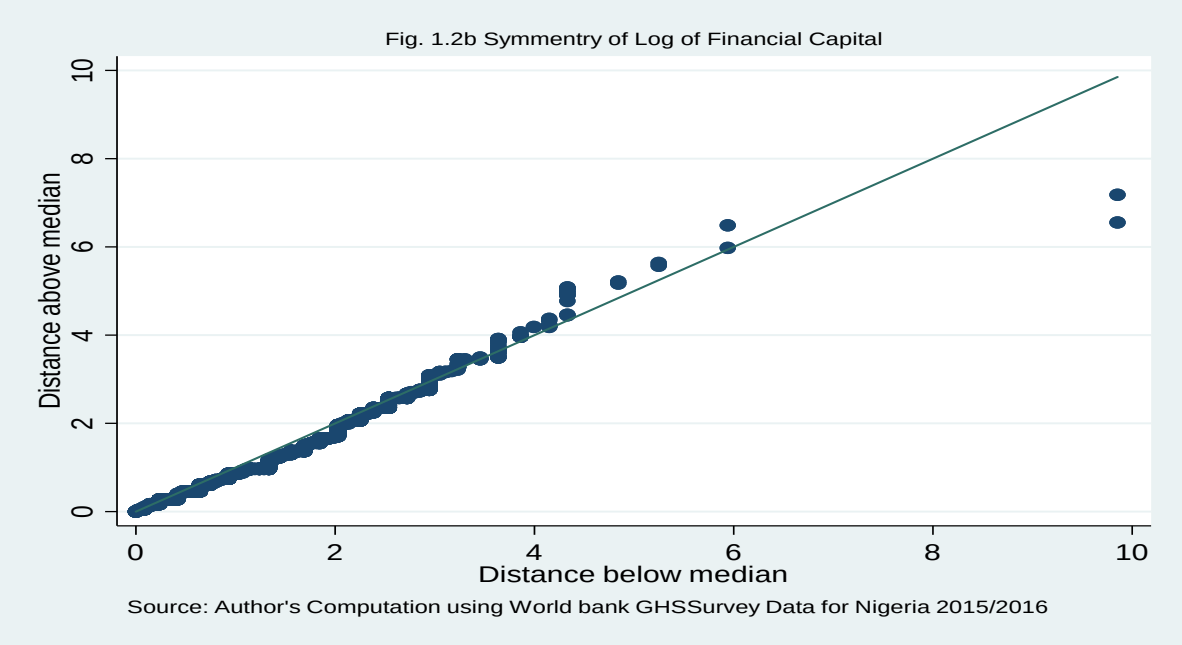
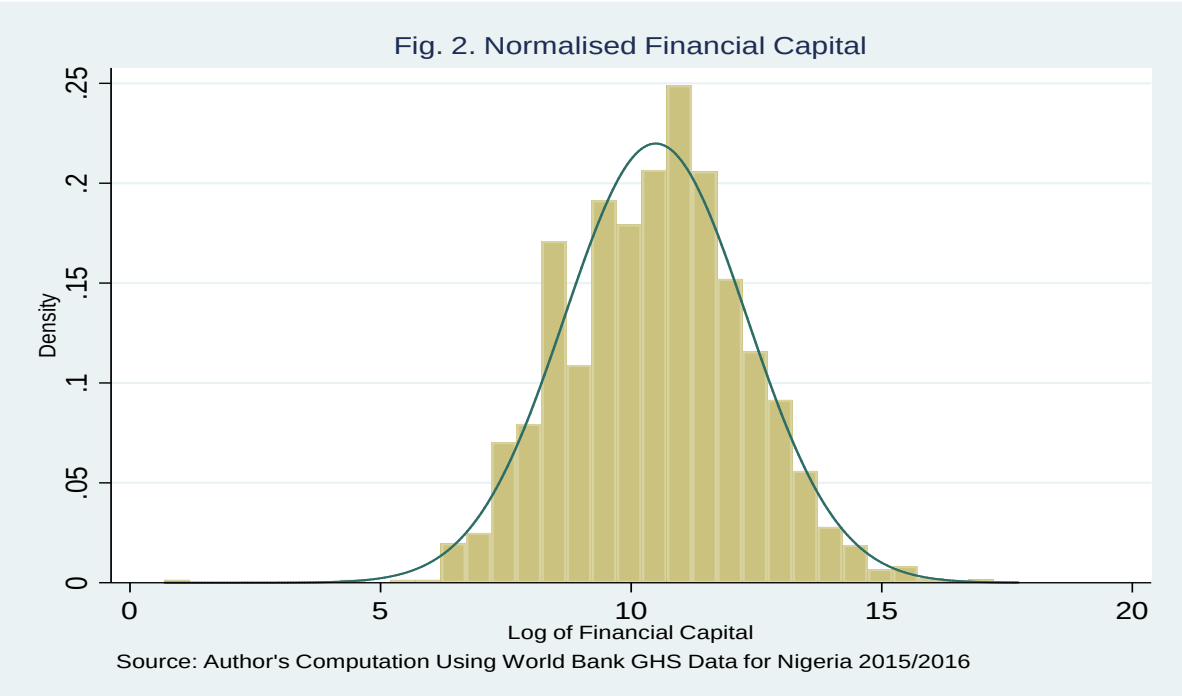


Fig. 4. 2 Distribution of the Transformed Dependent Variable (Financial Capital)



The reference line in figure 4.3 is the median value of the log of financial capital. We define the reference line as fc = m (where fc = financial capital and m = the median value of fc). The expression means that all points should lie on the reference line for financial means to appear symmetrically distributed. Fig.4.4 show the density distribution of the normalised financial capital variable.

Fig. 4. 3 Density Distribution of Financial Capital (Transformed)



4.4 Results

Presented in tables 3 and table 4 are the results of the two models constructed for this study. The results in tables 3a and 3b consider the connection between international remittances together with the earning attributes of households and the financial capital of households. Table 3b adds an interaction term to account for the rural family specifics.

Table 4. 2 Mean and Quantile Regression Estimates of the Covariates on the Log of Financial Capital

Variable	**Mean Reg**	**Quantile regression**			
		q25	q50	q75	q95
International remittances	0.0248*	0.0442**	0.0292	0.0117	-0.0019
	(0.0147)	(0.0218)	(0.0181)	(0.0168)	(0.0178)
Ratio of internet access.	1.103***	1.259***	1.031***	0.999***	1.674***
	(0.1870)	(0.2460)	(0.2250)	(0.3380)	(0.2700)
Age of hh head	0.0145***	0.0155***	0.0168***	0.0145***	0.0154***
	(0.0023)	(0.0028)	(0.0030)	(0.0039)	(0.0049)
Ratio of literacy	0.561***	0.608***	0.600***	0.531**	0.717**
	(0.1300)	(0.1740)	(0.1940)	(0.2110)	(0.3170)
Ratio of higher education	-0.508***	-0.682***	-0.724***	-0.348*	(0.1360)
	(0.1220)	(0.1830)	(0.2270)	(0.1830)	(0.1970)
Size of a household	0.108***	0.100***	0.117***	0.1000***	0.0957***
	(0.0099)	(0.0109)	(0.0143)	(0.0119)	(0.0161)
Ratio of mobile phone ownership	0.700***	0.508*	0.700***	0.991***	1.021***
	(0.1820)	(0.3060)	(0.2680)	(0.3650)	(0.3660)
Ratio of labour hours	0.0324***	0.0371***	0.0387***	0.0298***	0.0145**
	(0.0038)	(0.0050)	(0.0049)	(0.0058)	(0.0058)
Registered business	1.529***	1.539***	1.408***	1.576***	1.632***
	(0.1180)	(0.1430)	(0.1320)	(0.2230)	(0.2200)
Rural Sector	-0.238***	-0.285***	-0.221***	-0.126	-0.104
	(0.0700)	(0.1020)	(0.0587)	(0.1370)	(0.1400)
Constant	9.640***	8.701***	9.666***	10.62***	11.91***
	(0.1830)	(0.2690)	(0.2670)	(0.2870)	(0.3420)
Observation	2,637	2,637	2,637	2,637	2,637
R-Squared/ Pseudo R-Sqr	0.245	0.1421	0.1414	0.1383	0.1544

Standard errors in parentheses (*** p<0.01, **p<0.05, *p<0)

Table 4. 3 Interaction Effects

Variable	Mean Reg	Quantile Regression			
		q25	q50	q75	q95
International remittances	0.0305*	0.0802***	0.0586***	0.00722	-0.0097
	(0.0181)	(0.0202)	(0.0185)	(0.0238)	(0.0128)
Ratio of internet access.	1.101***	1.269***	1.015***	1.018***	1.673***
	(0.1880)	(0.2240)	(0.1820)	(0.2090)	(0.3560)
Age of hh head	0.0145***	0.0157***	0.0165***	0.0145***	0.0153***
	(0.0023)	(0.0041)	(0.0023)	(0.0032)	(0.0027)
Ratio of literacy	0.561***	0.619***	0.575***	0.527***	0.714**
	(0.1300)	(0.1540)	(0.1870)	(0.1660)	(0.2950)
Ratio of higher education	-0.512***	-0.709***	-0.748***	-0.367*	(0.1360)
	(0.1220)	(0.2150)	(0.1840)	(0.2090)	(0.2480)
Size of a household	0.108***	0.102***	0.115***	0.0970***	0.0955***
	(0.0099)	(0.0117)	(0.0075)	(0.0086)	(0.0135)
Ratio of mobile phone ownership	0.702***	0.489**	0.734***	0.975***	1.018***
	(0.1820)	(0.2470)	(0.2130)	(0.1990)	(0.3900)
Ratio of labour hours	0.0324***	0.0370***	0.0385***	0.0292***	(0.0146)
	(0.0038)	(0.0049)	(0.0051)	(0.0059)	(0.0106)
Registered business	1.632***	1.530***	1.531***	1.395***	1.566***
	(0.2200)	(0.1180)	(0.2080)	(0.1210)	(0.2130)
Rural Sector	-0.104	-0.231***	-0.272***	-0.193**	-0.138
	(0.1400)	(0.0712)	(0.0919)	(0.0820)	(0.1150)
1.rsector#c.Intotalrem	-0.0169	-0.0803**	-0.0605*	0.0311	0.0402
	(0.0308)	(0.0332)	(0.0342)	(0.0418)	(0.0454)
Constant	9.635***	8.703***	9.669***	10.67***	11.91***
	(0.1830)	(0.3080)	(0.2410)	(0.2640)	(0.2030)
Observations	2,637	2,637	2,637	2,637	2,637
R-squared/Pseudo R-Sqr	0.245	0.1427	0.1421	0.1386	0.155

Standard errors in parentheses (*** p<0.01, **p<0.05, *p<0)

Table 4. 4 Mean and Quantile Regression Estimates on the Log of Financial Capital (with local sources of finance added as covariates)

Variable	Mean Reg	Quantile Regression			
		q25	q50	q75	q95
International remittances	0.0148	0.0301	0.0148	0.00814	-0.0146
	(0.0140)	(0.0267)	(0.0125)	(0.0116)	(0.0152)
Profits	0.270***	0.412***	0.370***	0.269***	0.210***
	(0.0160)	(0.0301)	(0.0447)	(0.0246)	(0.0211)
Loans	0.00992	0.0154	0.0133	0.0221*	0.0197
	(0.0119)	(0.0240)	(0.0200)	(0.0125)	(0.0249)
Education expenses	1.15e06**	1.08e06**	1.12e06*	1.18e06*	7.68E-07
	3.17E-07	3.33E-07	3.54E-07	4.63E-07	8.66E-07
Regular income	-0.0156	-0.0419*	-0.00575	0.0143	-0.018
	(0.0135)	(0.0254)	(0.0127)	(0.0201)	(0.0130)
Ratio of internet access.	0.830***	0.957***	0.758***	0.855***	1.349***
	(0.1800)	(0.2780)	(0.1960)	(0.2410)	(0.3200)
Age of hh head	0.0125***	-0.0115**	-0.0112**	0.0136***	0.0197***
	(0.0023)	(0.0049)	(0.0044)	(0.0042)	(0.0036)
Ratio of literacy	0.454***	0.312*	0.705***	0.379**	0.450**
	(0.1240)	(0.1700)	(0.1200)	(0.1490)	(0.2040)
Ratio of higher education	-0.459***	-0.715***	-0.392***	-0.266	-0.0777
	(0.1160)	(0.1670)	(0.1200)	(0.1760)	(0.2040)
Size of a household	0.0748***	0.0665***	0.0726***	0.0676***	0.0683***
	(0.0096)	(0.0127)	(0.0143)	(0.0155)	(0.0167)
Ratio of mobile phone ownership	0.633***	0.603**	0.572***	0.765***	0.765**
	(0.1730)	(0.2620)	(0.1870)	(0.2680)	(0.3140)
Ratio of labour hours	0.0212***	0.0228***	0.0212***	0.0175***	0.00571
	(0.0036)	(0.0061)	(0.0037)	(0.0045)	(0.0085)
Registered business	1.257***	1.045***	1.171***	1.304***	1.110***
	(0.1130)	(0.2410)	(0.1020)	(0.1420)	(0.1890)
Rural Sector	-0.166**	-0.156	-0.159*	-0.114	0.0157
	(0.0666)	(0.1080)	(0.0913)	(0.1190)	(0.1240)
Constant	7.441***	5.261***	6.329***	8.491***	10.66***
	(0.2190)	(0.3500)	(0.5080)	(0.2930)	(0.2280)
Observations	2637	2637	2637	2637	2637
R-squared/ Pseudo R-Sqr	0.323	0.189	0.1936	0.1911	0.2028

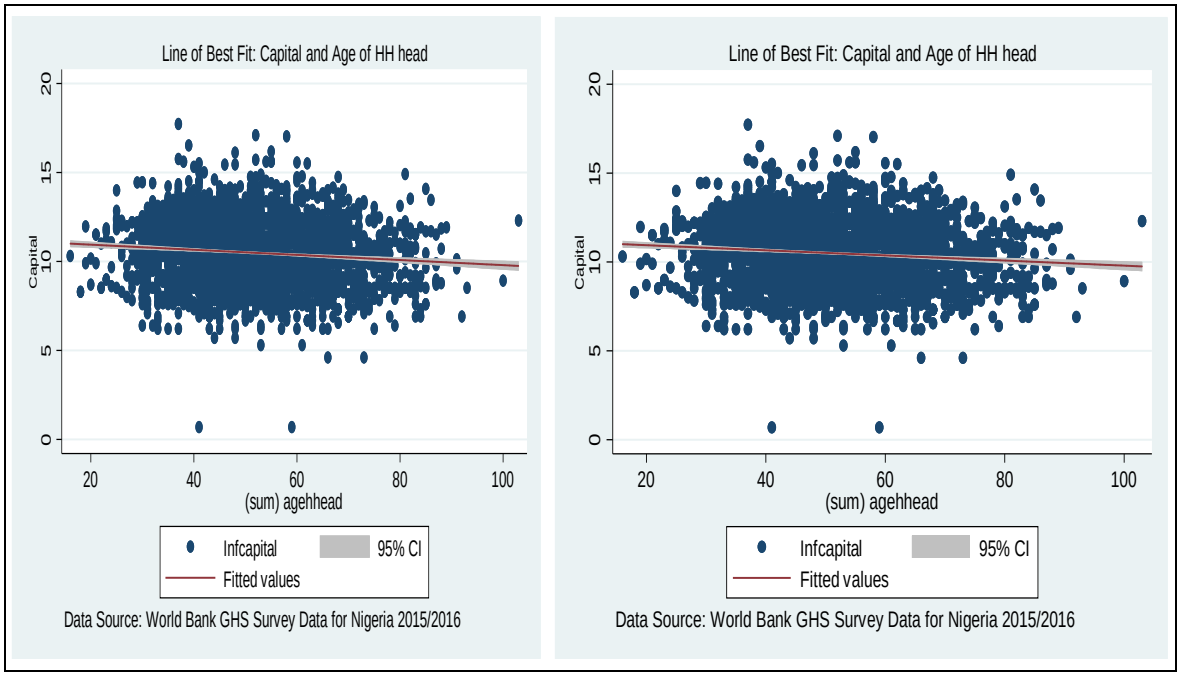
Standard errors in parentheses (*** p<0.01, **p<0.05, *p<0)

Table 4. 5 Interaction Effects

Variables	Mean Reg	Quantile regression			
		q25	q50	q75	q95
International remittances	0.0251*	0.0709***	0.0251**	0.00892	-0.0162
	(0.0145)	(0.0224)	(0.0127)	(0.0206)	(0.0163)
Profits	0.373***	0.416***	0.373***	0.271***	0.210***
	(0.0398)	(0.0671)	(0.0543)	(0.0257)	(0.0194)
Loans	0.013	0.0076	0.013	0.0213	0.0196
	(0.0191)	(0.0315)	(0.0222)	(0.0170)	(0.0205)
Education expenses	1.13e06**	1.01e06*	1.13e06*	1.16e06***	7.93E-07
	-5.33E07	-5.69E07	-6.10E07	-4.25E-07	-8.30E07
Regular income	-0.00497	-0.0314	-0.00497	0.0141	-0.0178
	(0.0129)	(0.0217)	(0.0119)	(0.0280)	(0.0158)
Ratio of internet access.	0.719***	1.010***	0.719***	0.859***	1.327***
	(0.1870)	(0.3230)	(0.2390)	(0.2760)	(0.3820)
Age of hh head	0.0110***	0.0120***	0.0110***	-0.0134***	0.0198***
	(0.0032)	(0.0029)	(0.0023)	(0.0029)	(0.0033)
Ratio of literacy	0.671***	0.275*	0.671***	0.382**	0.457*
	(0.1750)	(0.1570)	(0.1200)	(0.1730)	(0.2600)
Ratio of higher education	-0.429***	-0.736***	-0.429***	-0.259	-0.0924
	(0.1330)	(0.1120)	(0.1620)	(0.1940)	(0.1980)
Size of a household	0.0738***	0.0686***	0.0738***	0.0674***	0.0661***
	(0.0102)	(0.0133)	(0.0148)	(0.0117)	(0.0228)
Ratio of mobilephone owners	0.601***	0.633**	0.601**	0.754***	0.777**
	(0.2090)	(0.3080)	(0.2920)	(0.2910)	(0.3660)
Ratio of labour hours	0.0229***	0.0211***	0.0229***	0.0176***	0.00506
	(0.0042)	(0.0059)	(0.0038)	(0.0034)	(0.0065)
Registered business	1.177***	1.172***	1.177***	1.307***	1.101***
	(0.1000)	(0.2160)	(0.0790)	(0.1650)	(0.3550)
Rural Sector	0.130**	0.0905	0.13	0.106	0.0152
	(0.0538)	(0.0727)	(0.0869)	(0.1050)	(0.1000)
1.rsector#c.Intotalrem	-0.039	0.0913***	-0.039	-0.00777	0.00078
	(0.0446)	(0.0345)	(0.0423)	(0.0397)	(0.0727)
Constant	6.277***	5.210***	6.277***	8.459***	10.69***
	(0.4030)	(0.6490)	(0.5440)	(0.2630)	(0.2760)
Observations	2367	2367	2367	2367	2367
R-squared	0.324	0.1907	0.1941	0.1911	0.2028

Standard errors in parentheses (*** p<0.01, **p<0.05, *p<0)

Fig. 4. 4 Post estimation Line of Fit of Financial Capital and Remittances (Left); and Financial Capital and Age of Household Head.



Source: Author's Computation.

The line of best fit for the two variables, remittances, and age of household head, is in sync with the magnitude of their coefficients concerning our variable of interest financial capital. As shown in figure 3, the scatter plot relationship between financial capital and remittances has an upward sloping fit depicting a positive relationship between the two variables. The scatter points farther away from the line of fit indicate the extreme values observed in the data. The fit line between the interest variable and the age of the household gently slopes downwards, revealing a negative relationship as the head of a household advances more in age and less able to work in a labour-intensive country like Nigeria, with the observation points clustering around the line of best fit.

Fundamentally, researchers have realised that occasionally charting data can have a much greater impact than simply tabulating it (Jann 2014). We therefore display the regression coefficients plots in figures 3 to 5, emphasising the key characteristics of the data while also better comparing and explaining the regression coefficients and distinguishing between OLS and QR estimations. Additionally, compared to p-values and significance-level tables, plots give an instant and precise indication of statistical results.

Fig. 4. 5 Post Estimation Plots of Selected Covariates for OLS and QR

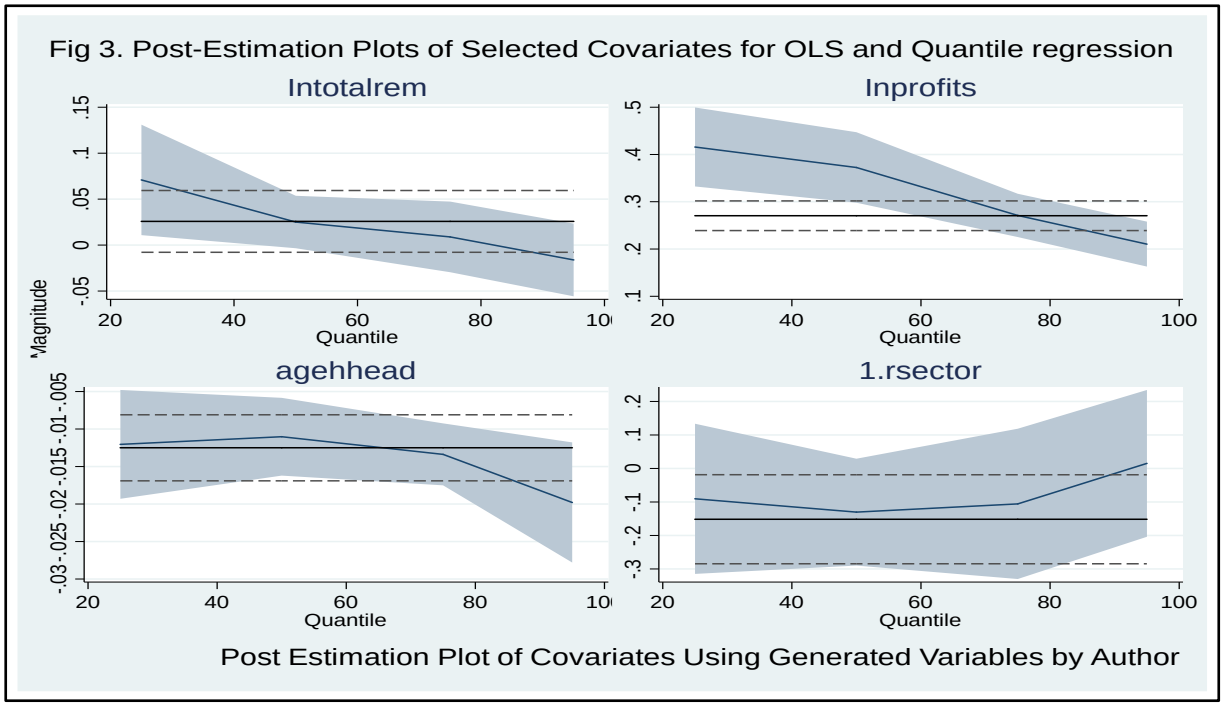


Fig. 4. 6 A 10% Incremental Post Estimation Plot of the 50th Quantile

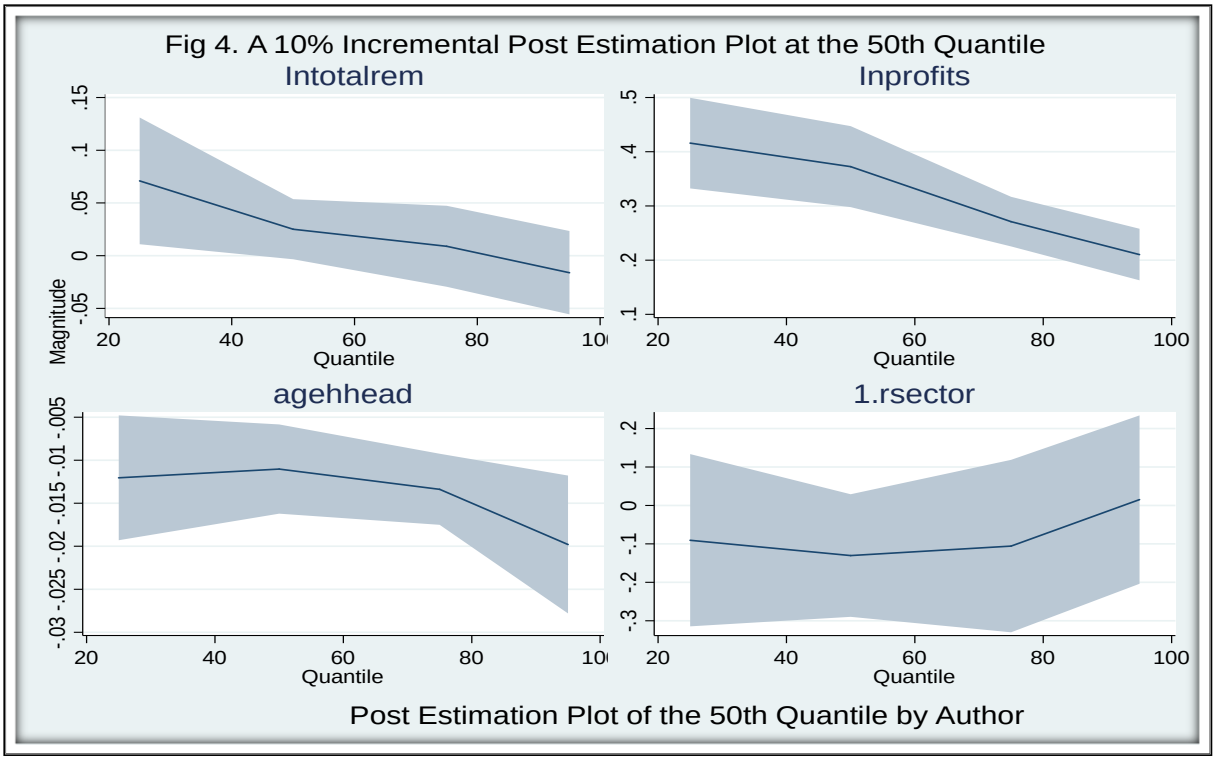


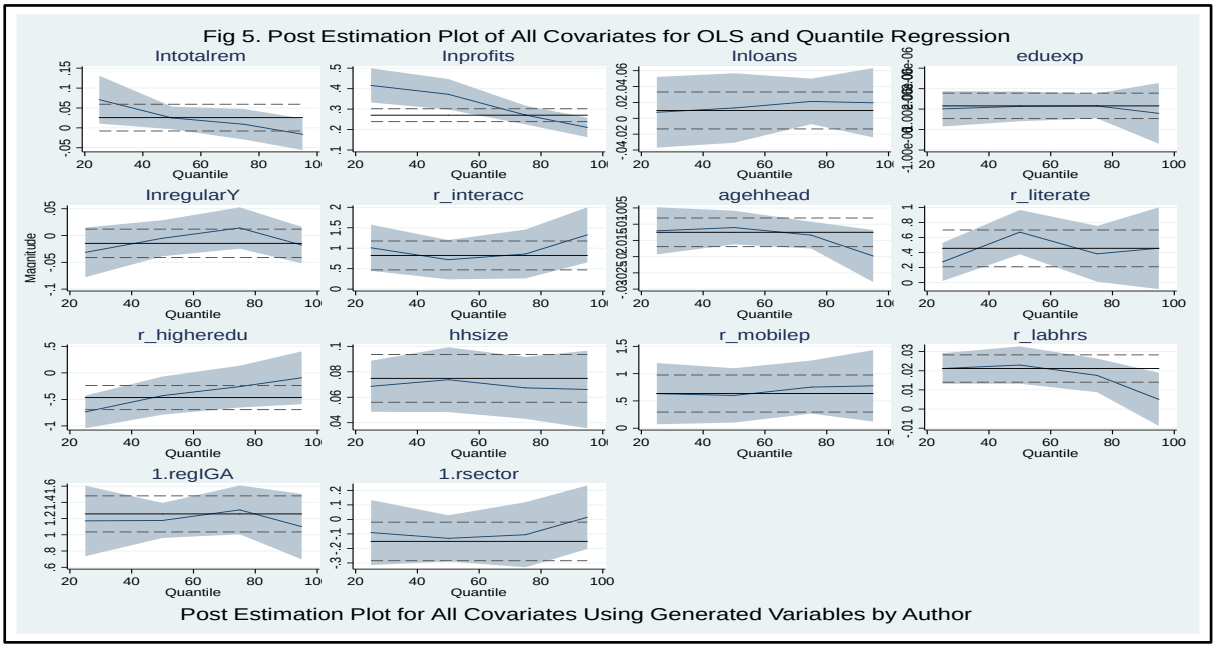
Figure 4.7 shows a 10-point incremental post-estimation plot of four key covariates in the analysis at the 50th quantile while figure 5 depict all covariates plot. In the figures, international remittances display a non-linear downwards slope from left to right

indicating a reducing significance as the points increases and tends towards no link and then, negative as the quantile level increases. The same goes for profits. The trend in the profit variable indicates that profits have greater impact on financial capital at lower quantiles and reduces as the quantile level increases.

Age of household head indicates a slow but decreasing function of financial capital from age 16 to the median age of 50 and then, assumes a fast-increasing negative function of financial capital. The pattern is interpreted to mean that beyond the median age of 50, the ability of a household to access financial capital for business reduces due to several factors such as aging. The rural sector variable (rsector) displays an initially negatively increasing function of financial capital but, changed to a positive and increasing function from about the 75th quantile. We interpret this to mean that if rural households were to receive more remittances, living in rural locations would be immaterial as to its effect on financial capital. The education variable against expectations, returned negative. This could be due to the high level of unemployment among people with higher education in the country. It could also be attributed to the lack of practical skills required of modern job roles.

Compared with the mean value represented by the horizontal line in the curves, show that making a conclusion based on the OLS estimates alone would have been misleading.

Fig. 4. 7 Post Estimation Plot of All Covariates for OLS and QR



4.4.1 Findings

Discussed below are the findings for each model constructed and used in the analysis.

Model 1

In the first equation, remittances are only significant at the 25th quantile with a coefficient of 0.0442** and could lead to over 4% increase in financial capital given a 1% increase in remittances receipts by a household. The OLS estimation returned insignificant under the 95% confidence interval (but significant at the 90th with a value of 0.0248*. However, households' characteristics variables such as internet access, ownership of mobile phone, and literacy are very important in explaining how families can access capital as shown in their various coefficients and standard errors. However, rural families find it more difficult to access financial capital for their businesses by up to about 28% compared to urban families.

The two variables of (remittances*rsector) in the models are interacted to gain a better understanding of the unique effect of international remittances on the financial capital of rural households' businesses. The results indicate an adverse link between rural families and access to financial capital. The interaction term showed a value of -0.0169 (OLS), -0.0803** (q25) and -0.0605* (q50) but insignificant at the upper quantiles. The coefficients of remittances showed significance at 0.0802 at the 25^{th} and 0.0586 at the 50^{th} quantile respectively. The coefficient of the indicator variable rural sector less significant at 0.0305* for mean regression. Quantile estimation is significant at 0.0802***(q25) and 0.0586*** (q50).

While the Pseudo fit for quantile regression performed well at 0.14 to 0.16 across quantile, the overall model fit for OLS remained moderate at 0.25 percent. The non-significance of remittances after the 50^{th} quantile can be interpreted to mean that remittances are only effective as a source of capital finance for households when the capital need is small.

Model 2

Model 2 controlled for local sources of capital finance for households and thus has more explanatory power. These are profits, loans, regular receipts of income and education expenses as identified in the survey. Again, two equations are executed: one with, and the other without the interaction term. In the first equation, remittances returned insignificant for OLS regression and for all quantiles.

When the interaction term is added to the model, remittances remained significant for OLS (10%), and at the 25th (1%) and the 50th (5%) quantiles. This is shown in table 4b. A percentage change in remittances can connect a 1.5 percent increase in financial capital at the 25th quantile and a 3 percent rise at the 50th quantile. At the 95th quantile, remittances returned a negative coefficient implying a negative relationship between remittances and financial capital at that quantile. Profits from local businesses are highly important across the board and can lead to increases in financial capital of between 40% and 20% at all quantiles (25th = 0.4, 50th = 0.37, 75th = 0.27, and 95th = 0.21). Profits can offer households' non-farm companies more capital funding than remittances can. The significance of remittances in the second equation also indicates that remittances may only be important if they serve a complimentary purpose to local sources of finance such as profits.

The results also indicate that households having access to the internet access are 18 – 32% more likely to access financial capital than families who cannot access the internet. Controlling for local sources of financial capital reduced the exposure of rural households' inability to access financial capital to 15% (-28-13%) compared with their urban counterparts.

4.5 Conclusion

Given the heterogeneity of the capital distribution of businesses held by remittance-receiving families, this chapter's analysis used a quantile model to determine the amount at which remittances from overseas can successfully provide finance to fund households' businesses in Nigeria. Second, it was intended to show that using a parametric test like Ordinary Least Square (OLS) to analyse the relationship between remittances and the financial capital for household-owned businesses could produce inaccurate or incorrect results given the wide variety of family-owned non-farm income generating activities. The results of the constructed quantile model's consideration of the 25th, 50th, 75th, and 95th quantiles are shown and discussed in section 4.4 above.

From the results and their discussions, the conclusion is reached that remittances as a source of capital finance are effective only when the capital need is relatively small and does exceed the median value of financial capital required to set-up or operate a household-owned business. Compared to the Mean regression, it demonstrates that using the quantile model has enabled the segregation of the effects of remittances on

financial capital along its quantiles (percentiles) structure which agree with previous studies such as Davino et al. (2014) and Lin and Benjamin (2017) that found that quantile regression enables the detection of more robust results in analysis than conventional procedures would because, the method does not focus on the conditional mean.

In addition, when local sources of funding households' businesses such as profits are available, international remittances becomes ineffective as a source of finance particularly when the financial capital need is high (over and above the median value). The results imply that not in all cases can remittances provide the capital need of a household interested in setting up a non-farm business or operating one within the context of a developing country with Nigeria as the reference. Domestic sources of finance such as profits and the ability to engage in labour-intensive activities are more effective in providing capital to households against reliance on foreign remittances the results demonstrated. The findings align with Ahmed *et al*. (2018) that found that accessing financial capital to diversify earnings is more difficult for rural families than their urban counterparts. In this study, it is confirmed that rural households are worse-off accessing financial capital by as much as 15% which is in agreement with Ahmed et al. (2018)'s study. In addition, the current study also finds that, if rural households were to receive enough remittances beyond the 75th quantile, it would not matter whether they live in the rural areas or not because they could still be worse-off.

4.5.1 Policy Implication, and the Need for Future Research

This analysis demonstrates that local financial resources are superior to overseas remittances in terms of their ability to finance household-owned companies. Their irregular nature (depending on when migrants or senders can remit from their foreign destinations) may account for their lower importance relative to domestic sources of capital finance. A good explanation for why people will spend money at a level consistent with their expected long-term average income provided by Friedman (1957)'s permanent income hypothesis. It also explains why remittances may not be considered permanent income because their frequency of receipt is irregular and depends on the social and financial standing of the sending immigrant.

The findings also demonstrate that, dependence on international remittances as a source of finance by households may fail to provide capital finance in the absence of

a solid and effective domestic support system for families in need of finance for their non-farm income generating activities (business). For there to be an effective capital support system, capital finance drivers such as an easily accessible financial market and an enabling operating environment are required. This means that the domestic drivers of finance and economic environment are a panacea for remittances to work. Anyanwu *et al*. (2016) found that factors like remittances, local investment rate, public spending, openness to trade, investment from abroad, among other factors seem to aggravate income dis-equalization when they studied income inequality in the West African region which could be due to income inequality and excessively high cost of capital finance. Extensive income distribution gap which would have an adverse multiplier effect on the savings/investment relationship by most of the population.

To avoid the shortcomings of earlier schemes, such as high obstacles in accessing the market, which needy people were unable to access uniformly, more research is needed on how to steer remittances towards providing long-term finance for businesses. More research is advised for a second reason: because officials diverted cash from earlier government projects, households found it extremely difficult to access those programmes and were forced to look for alternative forms of financing. More studies are also needed to block Identified loopholes in earlier projects.

CHAPTER 5. CATEGORISING HOUSEHOLDS BASED ON SHOCK -SEVERITY: THE EFFECTS OF REMITTANCES ON CONSUMPTION SMOOTHING POST-SHOCK

5.1 Introduction

The chapter contributes to this thesis by categorising households in terms of the severity of adverse shocks they suffered and examined the link between remittances and the post-shock consumption smoothening of households while controlling for domestic sources in their smoothening baskets. Previous studies have concentrated mainly on how remittances affect household consumption in some specific areas: For instance, the impact remittances have on agricultural households experiencing shocks and the effects of shocks on urban or rural households (Shehu and Sidique 2015). In other words, there is no known study that has sufficiently explored the link and impact of remittances on household's post-shock consumption smoothening based on the magnitude of the shock experience in the context of a developing country. It is, therefore, essential to explore this gap and add to the literature.

Households are classified into two groups according to the severity of shocks they have suffered: Families who experienced the most traumatic types of surprises (e.g., kidnappings, armed robbery) and families who experienced less traumatic shock types (e.g., low agricultural yield). Historical data on a household's consumption expenditure is then used as a continuous measure of shock. The classification allows for the determination of whether remittances positively connect with the post-shock consumption of families the same way for families in each group and for all families. By classifying households based on the severity of shocks they have suffered brings a fresh perspective to the subject's understanding and contributes to the existing literature in analysing the link between remittances and household consumption smoothening after adverse shock experiences.

Commenting on the importance of the distinction of families in line with specific features (Lim and Choi 2020; Coles and Mitchell 2022) suggests that it is helpful to divide households into groups in line with some attributable characteristics for a more robust analysis. According to (Leonard *et al*. 2016; Gray 2017), understanding how households and their families experienced shocks, particularly well-being, why some events were more serious, and why homes adopt some coping strategies is essential.

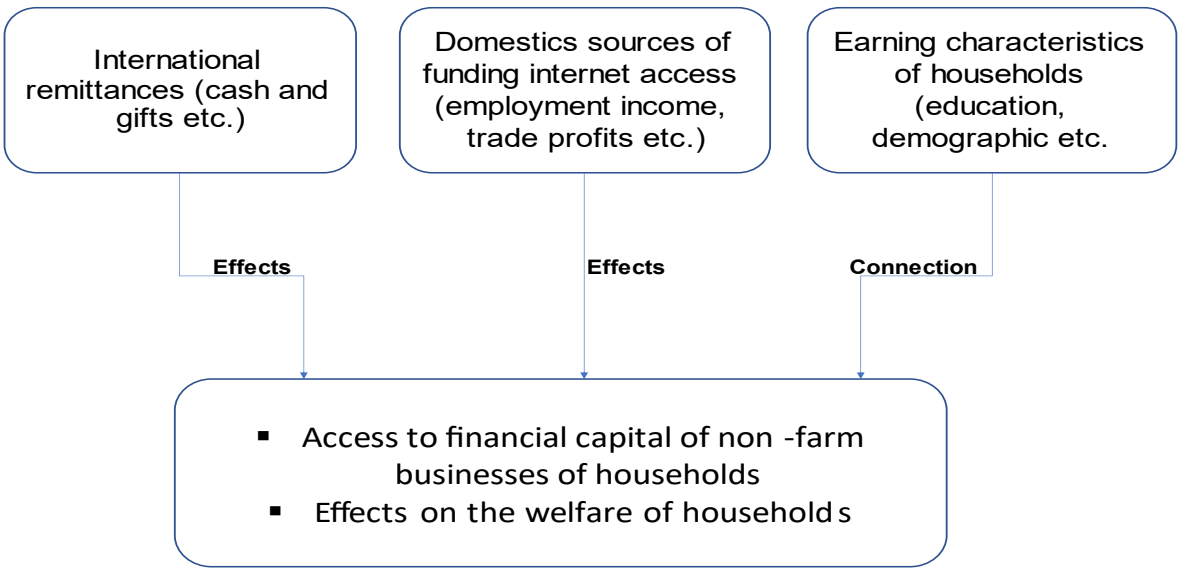
According to Ratha (2020), remittances to many developing countries have been on the rise, outstripping other capital flows over the past decade. Despite the increasing remittances inflow that peaked in 2018, households still cannot fund consumption after

suffering adverse shocks, thus indicating that the subject requires more research. The lack of adequate finance to cope with household consumption arising from adverse shock experiences is one of the most pressing concerns for Nigeria. With its devastating effects on family welfare, it has become a frontline issue in the literature with varied findings, albeit no consensus. Low-income families also suffer from a lack of insurance for shock incidences according to Rapoport and Docquier (2006), and the degree to which poor social protection and welfare benefits in developing nations are family-friendly (de Brauw and Woldehanna 2013). A lack of access to adequate finance to cope with consumption after shock experiences have made some households, in anticipation send at least a member abroad and look forward to international remittances (Schrieder and Knerr 2000; Kailash Chandra and Shrabani 2017). Thus, classifying households based on the severity of shocks they have suffered brings a fresh perspective to the subject's understanding and contributes to the existing literature.

5.1.1 Conceptual Framework

The framework in figure 5.1 below connects remittances and other shock coping measures to the post-shock consumption spendings of families affected by adverse shocks in the context of Nigeria. The objective is to determine the degree to which remittances, compared with other strategies, positively affects a household smoothening consumption due to shocks.

Figure 5.1.1 Remittances Post-Shock Consumption Framework for Households



Source: Author's Conceptual Framework

5.1.2 The Concept of Adverse Shocks and Post-Shock Consumption

According to the (UNDP 2011), adverse shocks are events that can trigger a reduction in well-being, which can affect individuals (illness, death), a community, a region, or even a nation (natural disaster, macroeconomic crisis). Negative shocks events can cause or compound poverty when risk variables manifest resulting to adverse shock events. Canagarajah *et al*. (2005) assert that an economic shock is a danger that has a “significant” adverse welfare implication on consumption, a significant loss of income, or high medical expense expenses. In their argument, Kozel *et al.* (2007) refer to shocks as the realisation of different states of the World and consider risks as leading to such completion.

The manifestation of risk (as a shock) also leads to undesirable welfare outcomes Dong *et al*. (2019). The works of Ekor *et al*. (2020) and Springer *et al*. (2022) that discusses the effect of the exposure to shocks could have on a household are also relevant. According to Springer *et al*., insecurity, climate shocks, infestations, animal sickness, desert insects, and the COVID-19 epidemic are examples of the periodic shocks Somali grain and livestock markets face. The shocks examples given by Springer *et al*., cuts across many developing countries including Nigeria, but, with each country’s domestic characteristic factored in.

The term "post-shock consumption" refers to how households might reduce consumption after suffering negative shock occurrences to meet their daily necessities. Daily expenses for households can include paying for food, paying for medical expenses, housing, clothing, and education, among other things. Households, especially those in poverty, confront more difficult problems when unexpected events like the death of a family head, a loss of a primary source of income, the loss of a home, or natural disasters strike. When a household has no insurance and state intervention are lacking in many developing countries, households turn to informal means to cope with consumption. According to Kurosaki (2015) the sharing of risks within a community cannot provide a complete insurance against aggregate shocks like droughts and floods. What types of families are more susceptible to a drop in expenditure after a community is affected by such shocks, and what form of microeconomic process drives the family’s heterogeneity in sensitivity, given this inability.

5.1.3 Research Question and Test of Hypothesis

The second goal of this study is to classify families according to the intensity of the shocks they have experienced and to ascertain the relation that remittances have on the consumption smoothing that occurs in households who have received negative shocks. The following study question was created with this in mind.

Research Question

Do remittances have the same link on the post-shock consumption smoothing strategies for households that experienced more catastrophic shock events as they do for households that experienced less devastating shock events?

Hypothesis

At the 5% significance level, the hypothesis that there is no difference in the link of remittances on the post-shock consumption of households that experienced the most devastating shock events and households that experienced less-devastating shocks is tested.

The remaining part of this chapter is arranged as follows. Section 5.2 discusses relevant theoretical and empirical literature while data and method of analysis including model specification are discussed in section 5.3. Results are presented and discuss in section 5.4 while section 5.5 concludes this chapter with some recommendation and the need for more research on the subject.

5.2 Literature Review

In this section, what constitutes household shocks is explained in more details and put in greater context. Next, some of the risk factors associated with shocks are identified and examined, exploring indicators critical for families to experience unpleasant shock events. The government's efforts in addressing possible risks when they materialise and the role of remittances in the shock-remittances framework is then looked at. Following that, the relevance of remittances to households linking them to appropriate consumption theories concerning welfare analysis are discussed at the same time evaluating some previous empirical literature on the subject for relevance. The sections end with the gaps discovered in the literature search and the justification for this analysis.

5.2.1 Shocks and their Effects on Households

Adverse shocks afflicting households have become one of the most pressing concerns plaguing Nigeria and many other developing countries. Due to the apparent occurrence of negative shocks resulting from mitigatable risks, the aim to keep household welfare from deteriorating to a terrible state is at the top of many of these countries' policy agendas. According to Combes and Ebeke (2011), households suffering shocks confront various challenges, including consumption volatility, negatively impacting risk-averse agents' welfare. A lack of access to adequate finance to cope with consumption after shock experiences have made some households vulnerable to poverty, and the already poor, fall deeper into poverty. With inadequate state and public interventions, it has become a norm for many families to strive to send at least a member abroad and look forward to international remittances (Schrieder and Knerr 2000; Kailash Chandra and Shrabani 2017).

In many poor countries where government and or public interventions in periods of shock are grossly inadequate, and households are left to cope with the effects of shocks on their own, remittances have been established to play an important role in the consumption smoothening baskets of families who have access to remittances as an essential source of coping. Given this importance, the literature is replete with studies on the relationship between remittance and households' post-shock consumption. Many of such works have shown that households rely on remittances as a sort of social insurance one a crucial source to smooth consumption (Yang 2008a; Janzen and Carter 2019; World-Bank 2019).

Many households rely on remittances in their post-shock coping measures because they have limited access to formal affordable credit and insurance markets. A lack of government support and their limited capacity to make informed decision on secured coping strategies aggravates the situation (Olalekan *et al.* 2011). The absence of these markets /or their non-affordability by families can substantially impact their coping abilities, which could further result in various challenges such as poor environmental conditions, ill-health, malnutrition, overpopulation and even death. According to Ransom *et al*. (2013), poor environmental conditions, for example, may increase insect and protozoan infections and contribute to ecological deficiencies in micronutrients, while overpopulation can reduce food adequacy, leading to inadequate food intake or intake of foods of poor nutritional quality and quantity.

In different studies, Romano (2009) and Pradhan and Mukherjee (2018) identified some of the effects of shocks on households to include consumption variations reductions, reduction in earnings, temporary or permanent displacement, loss of accommodation or dwelling places, sickness, flooding, job losses, income losses, withdrawal of Children from School and even death. Worst still, apart from lack of access to the credit market, most households are poor and lack social insurance. Consequently, families with access to remittances from international and local sources rely on it to help fund or support their consumption and non-consumption expenditure.

5.2.2 The Incidences of Households Shocks in Nigeria

The incidences of adverse shocks have been of grave concern to households and the government in Nigeria. Many families confront various elements of surprises in flooding, communal clashes, criminality, and other forms of violence. The Internal Displacement Monitoring Centre (IMDC) Geneva, an agency that monitors situations of displacement caused by conflict and violence, disasters, and development globally, reports that conflict and violence led to 248,000 new displacements across 19 of the 37 states (including the FCT) in Nigeria. At the same time, the ongoing insurgency in the northeast triggered 105,000 criminal violence in the northwest and 88,000 in the north-central states. The number of communal violence during this period in the central region was 55,000.

In 2012, flooding in Nigeria pushed rivers over their banks and submerged hundreds of thousands of acres of farmland. By mid-October, floods had forced 1.3 million people from their homes and claimed 431 lives according to the Nigeria's National Emergency Management Agency (NEMA), 2012). Another instance of flooding worth mentioning was in 2019, where it accounted for 157,00 new displacements out of about 2.6 million people displaced in 2019. These shock events have pushed peopled more into poverty. Households thus face exceedingly tough times in their consumption baskets while responding to shocks.

The frequent occurrence of shocks among households, coupled with a lack of effective shock coping mechanisms in the region, has made many homes vulnerable to poverty (Alayande and Alayande 2004; Hoogeveen et al. 2004; Shehu and Sidique 2015). Common characteristics of families confronted by shocks in Nigeria include that they possess little or restricted access to social safety nets and cannot access formal credit

necessary to mitigate the consequences of severe challenges arising from shocks and associated risks. Thus, those receiving remittances see it as cushioning towards recovery. Hence, using remittances to hedge against future shocks has increasingly become one of the reasons behind households' decision to sponsor or send at least a member of their family abroad.

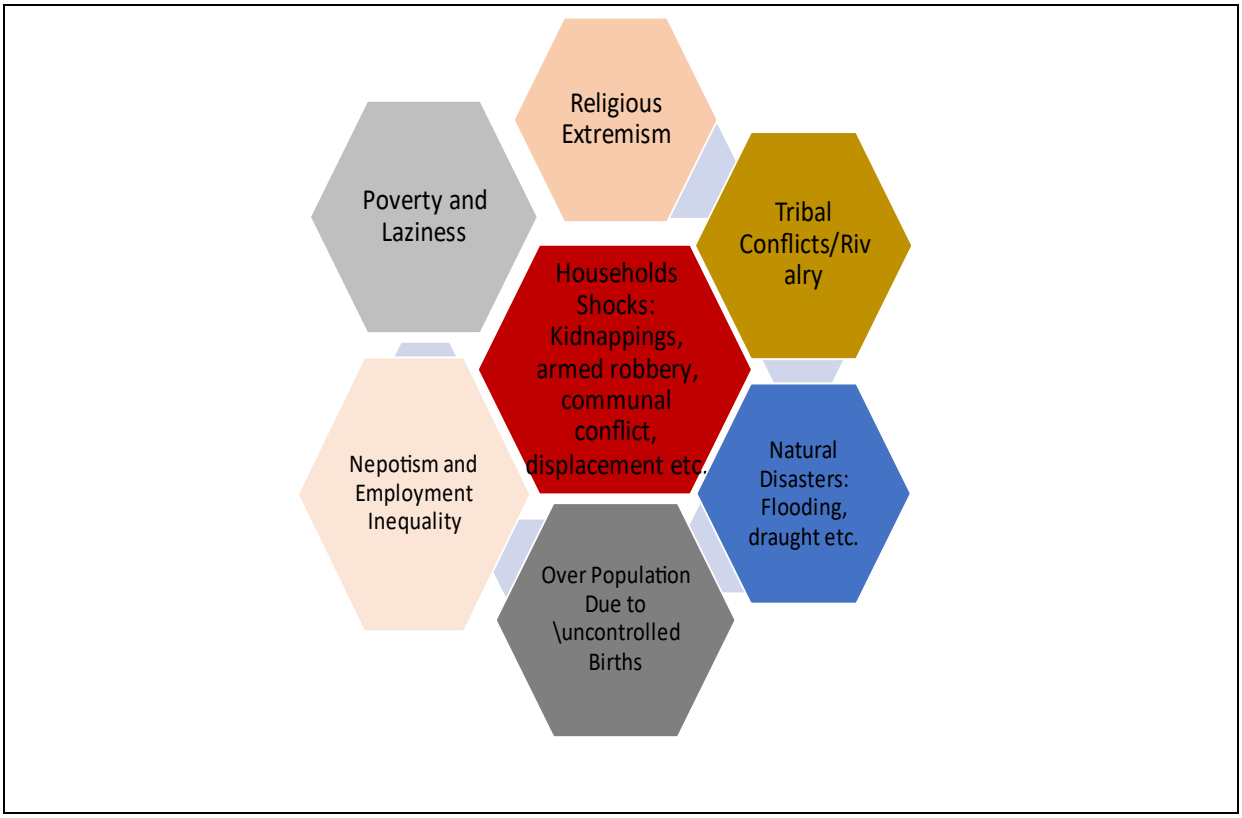
Nigeria is known to be the largest recipient of personal remittances in Sub Saharan Africa – SSA, the most populated in the region and households are experiencing diverse kinds of shocks due to various levels and forms of violence. Thus, a detailed analysis of remittances on the shock-coping abilities of homes' is required to formulate and devise social intervention strategies necessary to assist families in their coping measures. Increases in remittances on the one hand and negative shock experiences on the other thus present a desirable choice for a study.

While is agreed that risks are a central part of life for households in low-income countries according to (Bonfrer and Gustafsson-Wright 2017), some of the risk and shock causing factors in Nigeria have been identified in this study. While some of the occurrences are obvious, many are salient and appears ignored in discussing the underlying factors that could cause adverse shocks. Shock-causing risk factors in the Nigerian environment are numerous and could be natural or man-made. Figure 5.1 below illustrates some of these risk factors and their linkages to household shocks.

Households in the past decades have continued to face a lot of security challenges, particularly related to violent crimes. Criminal activities are one major cause of shock for many households in the countries. The challenges are more so for homes that receive remittances abroad and have become crime targets. While the literature has found that remittances can help reduce criminality in LMI Countries and reduce social tension at the national or communal levels, its effect on remittance-receiving households trying to cope with consumption is untested. As it appears, families receiving remittances have become targets of crimes due to the country's negative macroeconomic indicators and social crisis.

The shock of criminal attacks on households is one of the resultant untreated risk factors, as shown in the figure below.

Fig 5.1 Shock Factors in Nigeria



Source: Author's Computation

Figure 5.1 identifies some of the shock-causing factors in Nigeria (artificial and natural causes. While several artificial factors are shock causing agents apart from natural causes in Nigeria, the connections between the above-developed risk factors, as shown in fig. 5.1 is multifaceted. For example, according to (Okunade and Njoku, 2013), the prevailing explanations for the rise of religious extremism and, subsequently, terrorism in Nigeria focused on socioeconomic inequalities of poverty and subjective reinterpretation of religious ideologies, and Marxist Marxism inspired manipulations. They contend that the fear of 'domination' or de-establishment by religious majorities in Nigeria has led to the upsurge of violent religious movements or religious extremism that have gradually metamorphosed into a form of terrorism. See also (Hashimi, 2009), who contends that "the fear of being deprived of something drives one to act aggressively, while the fear of being left outdrives the movements against prevalent forces".

Tribal conflicts and rivalries among the various ethnic and tribal groups are another underlying risk factor leading to household shocks. As early as the 1980s (Franz, 1981; Chebunet *et al*., 2013) analysed the settlement and migration pattern of the

pastoral Fulani in Nigeria and Cameroon and argued that conflicts among pastoralists and their neighbours are increasing in frequency and intensity. According to (Kehinde, 2019), past conflicts were solely due to the overlap of farmlands with cattle routes, where farmers grow crops on the roads but have escalated, taking another dimension of ethnic and religious differences with little effort from government or community leaders aimed at addressing them.

The trend in insecurity has continued in recent times, as evidenced in the more grievous farmers-herders clashes while competing for available agricultural farmlands that have led to the loss of lives, property, and displacement of households in Northeast Nigeria. For example, the international crisis group Africa report 2018 finds that more than 1,300 Nigerians have died in violence involving herders and farmers. Once spontaneous attacks have become premeditated scorched-earth campaigns in which marauders often take villages by surprise at night. Apart from death and displacements because of this kind of shock, many other households have lost their sources of income, maimed, and become more vulnerable to ill health and poverty with little or no access to social security.

These incidences of shocks have triggered increased out-migration by household members from the country as shown below using the net migration rate of the country. This can be visualise using the net annual migration rate which is the difference between the total number of immigrants to the country and the total number of emigrants from the country, which includes both citizens and non-citizens. Table 5.1 indicates a positive net annual migration rate for the country between 2000 (10.33%) and 2008 (7.73%) largely accounted for by free intra-regional movements and relative peace and security enjoyed in Nigeria. However, from the year 2009, which coincides with the global economic crisis and increasing insurgency and communal clashes, there was a sharp turn of the rate from 7.73 in 2008 to a negative value of -2.48 in 2009 and has remained negative till 2022.

The increase in more people leaving the country may have been fuelled by the increasing level of shocks in the country which in addition to other economics factors such as unemployment, act as push factors for people to migrate while opportunities in destination countries act as pull factors to destinations. This may partly explain while remittances to the region have also been on the increase as reported by the World

Bank, notwithstanding that the stock of migrants does not necessarily explain the sending and receiving of remittances.

Table 5.1.1 Nigeria Net Migration Rate 2000 - 2022

Year End	Per 1000 Population	Annual% Change
2000	-0.203	10.33
2001	-0.222	9.36
2002	-0.241	8.56
2003	-0.26	7.88
2004	-0.289	11.15
2005	-0.318	10.03
2006	-0.346	8.81
2007	-0.375	8.38
2008	-0.404	7.73
2009	-0.394	-2.48
2010	-0.384	-2.54
2011	-0.373	-2.86
2012	-0.363	-2.68
2013	-0.353	-2.75
2014	-0.344	-2.55
2015	-0.336	-2.33
2016	-0.327	-2.68
2017	-0.319	-2.45
2018	-0.31	-2.82
2019	-0.303	-2.26
2020	-0.295	-2.64
2021	-0.288	-2.37
2022	-0.28	-2.78

***Data Source*:** United Nations World Population Prospects 2022

This trend has continued in recent times, as evidenced in the more grievous farmers-herders clashes while competing for available agricultural farmlands that have led to the loss of lives, property, and displacement of households in Northeast Nigeria. For example, the international crisis group Africa report 2018 finds that more than 1,300 Nigerians have died in violence involving herders and farmers. Once spontaneous attacks have become premeditated scorched-earth campaigns in which marauders often take villages by surprise at night. Apart from death and displacements because of this kind of shock, many other households have lost their sources of income,

maimed, and become more vulnerable to ill health and poverty with little or no access to social security.

The economic shock of unemployment and inequality has become one of the underlying risk factors for shocks in Nigeria. Ogwumike and Ozughalu (2018) opine that the Nigerian labour market represents one of the sources of risk through which people fall into poverty. Employment inequality within the Nigerian public workspace ranges from gender discrimination to regional and tribal favouritism. Ogwumike et al. found that inequality is more pronounced in paid employment than in the self-employed segment of the Nigerian labour force and higher among women involved in paid work than men in the same employment segment. When inequality prevails, people become jealous and resort to self-help, including criminality, to 'get back to the society. In terms of coping with shocks, Efobi *et al.* (2020) found that belonging to an informal association can help households improve their percentage of food spending and food choices relative to non-member households. According to the study, households that can get a loan from the association and other individuals who may be members of comparable networks are the potential methods these ties hold.

Shehu and Sidique (2015) highlighted some of the consequences of shocks on Nigerian households, particularly rural families who are more vulnerable to idiosyncratic and covariate shocks. The lack of appropriate shock coping mechanisms in the region, according to the report, has placed households prone to poverty. According to the research, families turn to borrowing, adjusting food consumption, selling goods, or removing children from formal school, lacking functioning standard coping mechanisms.

5.2.3 Public Effort in Tackling Risk Factors and Assisting Households in Coping with Shocks

Nigerian households have limited or no access to safety nets. They cannot obtain sufficient formal credit, which is required to offset the effects of extreme shock events and related risks and smooth consumption. Nigeria's government and non-governmental organisations have been working to keep household wages and consumption fluctuating, particularly in rural areas. Some of the interventions to reduce household potential danger to shocks include the National Emergency Management Agency (NEMA), the National Directorate of Employment (NDE), the Universal Basic

Education Programme (UBE), the National Poverty Eradication Programme (NAPEP), and the National Health Insurance Scheme (NHIS). The Nigeria Social Insurance Trust Fund (NSITF), as well as the Agricultural Credit and Rural Development Bank, are among the others (NACRDB) as well as the Universal Health Coverage (UHC).

The organisations use Ex-ante or ex-post mitigating risk and work procedures. The central concept is that most of these Schemes are closed to the public, and formal risk-sharing organisations are limited. For example, just approximately 5% of the population enrolled in the NHIS, and all the participants work in the formal economy, leaving the informal sector employees uninsured. Low-income and the lack of a first-best remedy, consumption smoothness is a significant difficulty for most Nigerian households (Alam and Mahal 2014). As a result, families incur welfare upheavals such as a drop in non-medical spending, irreversible loss, such as selling of capital assets or irreversible diminution of the human resource via educational anomalies, all of which worsen the problem. Shocks will keep their sufferers in poverty indefinitely if there is no asset to sell and no institutional social security system to smooth consumption. As a result, the capability to smooth consumption by asset availability, borrowing capacity, and liquidity constraints is hampered (Onisanwa and Olaniyan 2019).

Households need credit to finance working capital and investment in fixed capital. However, some families are too poor to accumulate much savings (Davies 2008). Credit is essential for smoothing consumption when income typically experience large seasonal fluctuations. Access to credit can transform households, particularly those experiencing adverse shocks, through acquiring productive capital, which improves their capacity to generate income, savings, and investment for better welfare *(Beck et al.* 2009). Small-scale businesses and poor households are constrained to credit access because formal financial institutions in developing countries present persistent market imperfections arising from problems linked with adverse selection, moral hazard, and enforcement of credit contracts. Incomplete markets and imperfect information are a severe challenge to the functioning of the credit market in developing economies like Nigeria (Stiglitz and Weiss 1981).

Many developing nations' economies, particularly Nigeria's, are severely harmed by financial market inefficiencies. When families lack access to funds or cannot borrow

during times of shock, their consumption, wellness, and other socioeconomic needs suffer immensely. They may become locked in a vicious cycle of poverty, jeopardising the leadership potential of subsequent generations. These effects limit households' capacity to emerge from the severe poverty into which adverse shocks may well have driven them and their willingness to invest in human and social capital.

5.2.4 Remittances Framework and Consumption Smoothening

I have explained why I adopted the altruistic theory as the central strand underpinning this research. The charitable theory of altruism discussed in chapter two provides a valuable framework for understanding the basis of migrants sending remittances to smooth consumption due to shocks. Sending monies by migrants to their home countries from their destinations in a global economy for consumption purposes is undoubtedly a complex one. There are other theories specific to the consumption of households. However, Auguste Comte's theory provides a valuable framework for understanding the foundations of remittance sending in a global economy where the share of international migrants and remittances has continued to rise and contributes to Low- and Medium-Income Countries (LMICs) finance. According to proponents of the altruism hypothesis, individual family members aid each other, explaining migrant remittent decisions (Stark 1985, 1988). According to the idea, migrants will be willing to send resources to compensate for family members' income shortfalls, whether for consumption or investment.

The tenets of the altruism theory make migrants sometimes sacrifice their comfort to satisfy home members left behind. The generous gesture could be a reciprocal sacrifice as household members may have contributed to the emigration of the sending migrant to seek greener pasture. Viewed this way, sending remittances becomes almost obligatory. Comte believed that humans are morally required to forsake self-interest and live for others, according to followers of the altruistic philosophy (Opong 2012). When migrants send money back home from abroad for altruistic reasons, (Jacques 2022) noted that the worker maximises personal wellbeing. According to the study, by allocating her revenue between consumption in the country of domicile, household consumption in the land of origin, financial asset acquisition in the country of residence, and economic and non-economic purchase of assets (such as housing market) in the native country. Jacques says that "connection"

to one's home country and portfolio diversification could be other reasons for remittances.

A variant of the tempered altruism idea is the implicit contractual hypotheses proposed by (Stark and Lucas, 1995). According to the hypothesis, the migrant's decision to remit stems from mutually beneficial informal contractual arrangements between the migrant and their home. This implicit agreement that describes a migrant's behaviour is the consequence of two main factors: (a) risk and investment and (b) the lack of formal insurance contracts and imperfect capital markets. In terms of risks and investments, most homes put their money into the prospects of migrants, and remittances represent the families' return on investment. The second risk element is responsiveness to a family's desire to diversify income due to both families' and migrants' experiences in the absence of traditional insurance contracts. Crop failures, hunger, and job insecurity in metropolitan areas are all examples of farming insecurity which remittances can help fill gaps.

Another hypothesis is the prospect theory, which proposes to connect remittances to the motivations driving remittances from the perspective of the migrants. According to the prospect idea, in deciding whether to send remittances, the migrant evaluates expected results in terms of benefits and dis-benefits relative to their frame of reference in their choice selection when faced with uncertainty. Kahneman and Tversky (1979) developed the Prospect theory of behavioural decision making under uncertainty as an alternative to the previously prevalent anticipated utility theory of risk decision making. Its origins can be traced back to empirical violations of the normative anticipated utility theory, which states that all decision-makers strive to maximise their expected utility. Prospect theory differs from the classic expected utility theory because it relies on psychological principles for individual risk levels and worth judgement. It examines how decision-makers pick between alternatives like utility theory but differ in terms of the violations that underpin utility theory.

It would appear from the above that the most compelling reason for migrants to send remittances to their homelands in a developing country is consumption. Consumption being the main reason for remittance sending is not surprising because all poor and developing countries share similar characteristics such as high levels of poverty, unemployment, and low literacy among the rural poor.

5.2.5 Empirical Studies on Households Shocks

Households suffer a lot of shocks, whether in a developed or a developing country. However, the degree of impact shocks has on families and the remedy available to cope with consumption after they occur separate developing and developed countries in this context. In the developed Worlds, solutions could be in the form of insurance and social security interventions. For instance, in the United States, households frequently face unanticipated unfavourable income and expenditure shocks, with low- and medium homes experiencing these shocks at significantly higher rates, according to reports (Bufe *et al*. 2022). Households in the United States, for example, regularly experience unexpected negative income or expense shocks. The implications of such shocks on families' self-assessed well-being and how various kinds of flexibility (e.g., credit cards and social resources), according to Bufe *et al*., can help alleviate the damage of these disturbances in households. While some of these resources are sufficiently available but require criteria for activation, which some poor homes may lack in a developed country such as the United States, these options may not be available in most developing countries.

In Nigeria, for instance, one of the causes of shocks is high unemployment, which has led to so much hunger and social tension. The factors responsible for the several types of unemployment in the country are numerous. Ogwumike and Ozughalu (2018) opine that the Nigerian labour market represents one of the sources of risk through which people fall into poverty. Employment inequality has become one of the underlying risk factors for shocks in Nigeria. Employment inequality within the Nigerian public space work environment ranges from gender discrimination to regional and tribal favouritism.

Some of the identified risk factors and the failure of the domestic financial system to address the problem in Nigeria due to shocks are common to other developing countries. For example, Pajaron (2017) used panel data to investigate the dependence on remittances of Philippines households with limited access to the proper insurance coverage and finance who encountered rainfall and earnings disruptions. The study finds that families partially rely on their connections with relatives and friends to safeguard their consumption. Mathenge and Tschirley (2015) find similar results when they used home level data in rural Kenya to investigate whether and how farm households respond to unfavourable agricultural production environments, including ex-post changes in the off-farm supply of labour in response

to change weather shocks. The study specifically looked at how long-term weather conditions and individual rainfall shocks affect a household's decision to participate in the off-farm labour market and their profits from it.

According to Pajaron's study, rural families engage in off-farm work as a long-term plan to deal with the consequences of expected adverse weather conditions on their farm operations. The research reveals no significant short-run changes in off-farm interaction because of different, unanticipated rain events; nevertheless, within those situations, these families rely on remittance income and tiny earnings from agricultural labour.

Nguyen *et al*. (2020) focused their study on rural Colombia and investigated households' shock-coping abilities utilising social safety net programmes and interventions to assess whether rural households are obliged to limit their consumption due to shocks and what factors influence their coping techniques. According to the study, covariate shocks had significant and negative consequences on household consumption. They conclude that shocks cause households to utilise coping mechanisms such as selling off durable household assets, resulting in a fall in welfare.

Using municipal-level statistics on the percentage of households receiving remittances and the number of killings per 100,000 people in Mexico, Brito *et al*. (2014) investigated the impact of remittances from United States of America on crime rates in Mexico. They also examined other kinds of crimes and discovered that for every 1 per cent rise in families receiving remittances, there is a 0.19 per cent decrease in street robbery. Homicide rates are lower when remittances are received. The homicide rate drops by 0.05 per cent for every 1% rise in the number of households receiving remittances. The study's findings suggest that the transmission processes may be linked to an income effect or a disablement effect of remittances, which may increase education, open work prospects, and/or reduce the amount of time given to engage in illegal activity activities. Furthermore, observing drops when state-level panel data is in another specification. The report warns that when looking at the long-term impact of remittances on poverty, it is essential to consider various variables, notably income distribution, savings and investment, credit access, and labour motivations.

Sharma (2009) conducted an analysis and assessment of studies on the trend of remittances' impact on economic security and concluded that, on balance, remittances smooth household consumption and reduce poverty. The influence of remittances on poverty, on the other hand, is multifaceted and nuanced. While data from econometric research and household surveys suggest that remittances have reduced poverty in many countries, the size has varied and often depends on what characterises poverty. This characteristic becomes more evident when households confront shocks.

5.2.6 Remittances and Household Consumption Smoothening Due to Shocks

Many scholars see international remittances as a means of smoothening consumption and general welfare (sort of insurance) to households in developing Countries in periods of adverse shocks. For example, Yang (2008a) confirms that developing countries are prone to risks, such as crop and income loss, due to natural disasters (weather, insect infestations, fire) and civil conflict. The study contends that the incomes of households in developing countries are often highly exposed to environmental risk factors such as weather. The studies by Huang *et al.* (2005) and Papapetrou (2001) are relevant. On the degree of seriousness of shocks on households, the World Bank (2019) demonstrates that sudden events such as earthquakes and floods have effects different from those of slower-onset events such as drought and erosion.

In developed countries, Janzen and Carter (2019) show evidence that most households hedge against shocks through insurance and public welfare policy and conclude that insured households are less vulnerable to becoming impoverished than uninsured households (Ratha 2020). Insurance markets are underdeveloped in many developing nations, and public policy has failed to provide necessary interventions. Where there are underdeveloped insurance markets and public intervention, remittances fill this gap for households. Remittances help increase the well-being of receiving families in times of shock when they smooth consumption. Remittances thus improve the living conditions and can help households that face more significant saving constraints and are therefore exposed to greater risks to smoothen household income, as in the case of Mexico (Chami *et al.* 2005; Amuedo-Dorantes 2014)

As already shown, remittances flow to developing nations has increased in the past decade. The (World Bank, 2019) affirms that remittances are a significant and tangible

benefit to origin countries, particularly Low- and Medium-Income Countries (LMICs). The Bank notes that officially recorded remittances were estimated at $530 billion in 2018 and are more than three times the volume of official development assistance and comparable in size to foreign direct investment flows. (Ratha, 2014) found that from 2000 to 2017, the coefficient of variation of remittances in 123 Low- and medium-Income Countries (LMICs) was 0.6, compared with 0.5 for foreign direct investment. Unlike official aid navigated through authorised agencies, remittances flow directly to recipients. Remittances flow to LMICs by the end of 2019 was 554,218, representing about 77.5% (554,218/714,249*100) of global flows. The total flow to Sub Saharan Africa (SSA) was $49b, with Nigeria accounting for about $23.8b (48.5%). Nigeria thus stands as the 6th largest in remittances receipts among LMICs. Due to the enormous flow of remittances to LMICs, research on its effect on consumption and general household welfare by various authors targets various aspects.

Nigeria has six geopolitical zones, namely: north-east, north-west, north-central, south-east, south-south and the south-west. The country has witnessed increases in the inflow of international remittances over the years. Regrettably, it has also been confronted with various shocks in flooding, communal clashes, criminality, and violence, as discussed in the introductory part of this chapter. The resultant effects of surprises such as displacements and loss of dwelling houses have led to equally increased sufferings of families. As a result of inadequate government or public assistance, households rely on other sources such as remittances and past savings to smooth consumption. However, while families may claim to have suffered from shocks, shock incidences differ among households. The implication is that using remittances to cope with household consumption would depend on the degree of shock sustained. The benefits of remittances would vary depending on the category to which a household belongs.

Extant literature shows that households can use remittances as a form of insurance to cope with adverse economic and social shocks in the absence of social security provided by the state (Adams and Cuecuecha, 2013; Ratha, 2005; de Haas, 2007). It is contended in this analysis that the impact of remittances on households with various levels of shocks cannot be the same due to the heterogeneity of households on such as each household's unique characteristics. Examples include the impact of shock, location, education, savings, income level, whether a household receives remittances,

health conditions etc. To the best of our knowledge, the studies of the impact of remittances on households that have experienced shocks made no distinction between households facing the most severe shocks and those facing less severe shocks. Therefore, we argued further that, using remittances, households affected by the most extreme shocks would cope differently post-shock than households that experienced less-severe shocks.

In other words, remittances are likely to affect the consumption of the two categories of households' post-shock. Therefore, the contribution of this chapter to the literature comes from investigating this gap using data from the recently released 2018/ 2019 General Household Survey (GHS) Wave4 for Nigeria. I choose to examine Nigeria for several reasons. First, this country is the most populous nation in Sub Saharan Africa (SSA). Second, it is the highest recipient of remittances in the region. Also, the country has been experiencing a series of security and violent crimes and natural disasters such as drought and flooding quite often that has led to the displacement of households, destruction of dwelling houses, and unplanned migration, among others, over the past decades. Fourth, most families have limited access to formal affordable credit and insurance markets. Fifth, excluded are many households from social insurance, and government effort in addressing the situation is far from reasonable expectations.

5.2.7 Consumption Frameworks.

Understanding and altering household purchasing and consumption patterns are seen as the main forces behind a country's economic progress, according to (Nguyen 2022). Nguyen's argument is in conformity with earlier but recent studies on the subject such as Wilcox (1989), Natali and Moratti (2012), and Neubourg (2014) that also posit that while various indicators are available for performing welfare analysis, economists long favoured consumption as a proxy for living standards. In its general form, a consumption function (Y) links consumption to a range of factors (X), where both can be vectors. Although consumption spending is the most popular and favoured welfare metric, (Natali 2012) note that measuring it is difficult and time-consuming.

As a result of the difficulties in the measurement of welfare, various ideas have tried over time to gauge what constitutes a more objective measurement of household consumption as a component of welfare. The Infinite Horizon Model (IHM) with money

of Ramsey (1928), the Life Cycle Theory of Consumption (LCT) proposed by Ando and Modigliani (1963), the Relative Income Hypothesis (RIH) developed by Duesenberry (1949), and the Permanent Income Hypothesis (PIH) formulated by Friedman (1957) are prominent among these theories, according to (Wilson 1979).

The life cycle theory postulates in parts that consumption in any period is not the function of the current income of that period but the whole lifetime expected revenue. Lifetime expected gain implies that an individual is assumed to plan his consumption spending pattern based on his lifetime anticipated income and, where possible, maintains a constant or increasing but the slight level of consumption (Biørn 1980; Mehra 2001; Gourinchas and Parker 2002; Alp and Seven 2019; Drakopoulos 2021).

The LCH is used to analyse the relationship between consumption expenditure, income, and wealth. Since the 1950s, there has been a remarkable growth in the application of the model in analysing life-cycle choices- such as savings, consumption, and the supply of labour at the macro level, taking into consideration uncertainty which made the LCH a long-standing preference for analysing household consumption (Mehra 2001). According to Browning and Crossley (2001), the life-cycle framework holds increasing disrepute within the economics profession and opined that the theory's demise is much exaggerated. The elderly does not dissave as quickly as said in the model. Thus, non-compliant with elderly persons' dissaving accounts for one of the reasons why the essence of the theory is in disregard.

In the Relative Income Hypothesis (RIH) model, according to Alvarez-Cuadrado and Van Long (2011), the fundamental axiom of the relative income hypothesis is that the consumption behaviour of households does not depend solely on their total income but other peoples' income and consumption behaviour. The RIH assumption suggests that families strive to sustain their consumption pattern in such a way as to suit their community's average consumption rate, as reported by (TekİN and Kara 2020). The RIH has been criticised based on several research findings. For example, studies have shown that the median tendency to spend is constant under the absolute income hypothesis. Consequently, the prices of the multipliers do not differ according to the market cycle.

The Permanent Income Hypothesis (PIH) framework is adopted in this part of the study because its principles bear closer relevance are to this analysis. According to

Friedman (2015), what determines consumption is expected long-term income (earned from human and non-human wealth) rather than the current income level. Friedman referred to this as average long-run income as permanent income based on which people make their consumption plans. Friedman defines income earned from human wealth as human capital, which refers to the return derived from selling the labour services of a household, known as labour income. He described intangible assets such as savings and equities as non-human wealth. He also points out that in addition to permanent income, an individual or household's income may contain a transitory component he refers to as transitory income, which he describes as temporary that may not continue in future periods.

The hypothesis argues that any transitory changes in income will not affect permanent payment received and, hence, actual consumption. Changes in permanent income, rather than temporary income, drive a consumer's consumption changes deriving from the above. Remuneration consists of a receipt (anticipated and planned) component and a transitory windfall gain/unexpected) component. In the permanent income hypothesis model, the critical determinant of consumption is an individual's lifetime income, not his current income and defines it as the expected long-term average income. The PIH's average propensity to consume assumption was objected to by Laumas and Laumas (1976) because households with low levels of permanent income are under much heavier pressure to eat than households with much higher levels of permanent income. Despite its criticisms, many researchers have used the theory to empirically explore how shocks affect household consumption in developing countries (Browning and Crossley 2001; Jammeh 2020).

I aim to test the efficacy of remittances on the post-shock consumption of the two categories of households to other sources identified in the available data. Considering the information and variables constructed for this study, viewing remittances as transitory rather than permanent income due to their nature and frequency, I deem the PIH more appropriate than other frameworks. The study is, therefore, within the framework of the PIH model.

To test the implication of remittances on household consumption, we specify the household utility function as:

$$U = EU(C) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.1)$$

We denote expected utility by U.

C represents the level of household consumption by substituting U with expected utility. We have incorporated uncertainty into the model. Each rational household aims to maximize the sum of expected utility, constrained by the sum of initial assets and the value of their future savings or exogenous income over their lifetime. The theory assumed that each household could save or borrow money at a given rate of interest to meet the consumption expenditure of his family with the condition that he must pay the money before the end of his lifetime. If we assume the interest rate to be zero, the budget constraint of the household will be:

$$C_t < A_0 + Y_t = \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \qquad (5.2)$$

The marginal utility of consumption is always positive for consumers, and the budget constraint will be satisfied by each household with equality. Maximising the utility of households requires that the lagrangian function of each household be:

$$L = U(C_t + y(A_0 + Y_t - C_t) \ldots\ldots\ldots\ldots\ldots \qquad (5.3)$$

The first-order condition for the utility to be maximised concerning Ct is:

$$C_t = \frac{du}{dct} = y \qquad (5.4)$$

Equation 5.4 represents the level of household consumption by substituting U with expected utility we have incorporated uncertainty into the model. Each rational household aims to maximize the sum of expected utility, constrained by the sum of initial assets and the value of their future savings or exogenous income over their lifetime. The theory assumed that each household could save or borrow money at a given rate of interest to meet the consumption expenditure of his family with the condition that he must pay the money before the end of his lifetime. If we assume the interest rate to be zero, the household's budget constraint will be.

5.2.8 Summary of Review and Gap in Literature

The review of existing literature on the subject has been carried out in terms of theoretical underpinnings and empirical studies that explain the relationship between international remittances and households post-shock consumption. The existing theories of consumption examined in this review have been criticised and counter-criticised making it difficult to point to one framework that completely models

households' consumption behaviour and spending due to the difficulties in providing an accurate measure of welfare (Nguyen, 2022; Wilcox, 1989; Neubourg, 2014).

Although many frontline authors such as Ratha (2020), Adams and Cuecuecha (2013), Jammeh (2020), Lim and Choi (2020), and Rapoport and Docquier (2006) favour remittances as a lifeline for households in developing countries, there are opposing theoretical and empirical views that remittances may fail as shock-coping strategy by households for several reasons. Studies like those by Jessica and Richard (2016) illustrate how household labour supply and participation are affected by international migration and remittances. Additionally, Murakami *et al.* (2021) discover that remittances have a more detrimental effect than migration. Remittances lower the employment rate of non-migrants in the focal study by 10.2 percentage points, according to the study. A study by Kakhkharov *et al*. (2021), shows that remittances have a negative impact on post-shock consumption, healthcare costs and have little of an impact on schooling in underdeveloped nations. According to Khramova *et al*. (2020), one drawback of remittances is the creation of new, high-tech jobs and the slow, insufficient, and lagging population growth.

One of the review's highlights is that studies on the relationship between remittances and post-shock consumption tend to concentrate on other aspects of household welfare using indicators like geography, either urban or rural. Research on the effect of remittances on post-shock consumption of families is either non-existent or hazy in situations when households are divided based on the intensity of their shock experiences (bad harvests, the death of the family's head or breadwinner, or natural calamities like flooding). Thus, categorizing households according to the intensity of the shocks they have experienced adds to the body of literature and offers a new way of comprehending the subject.

5.3 Data and Method

This section describes data source and the method of analysis adopted in this chapter.

5.3.1 Data Description

This analysis employs data from the General Household Survey (GHS) for Nigeria 2018/ 2019 wave4 sourced from the World Bank. In the survey, households that experienced shocks responded to a series of questions on the coping measures they adopted in coping with consumption after they experienced shocks. We generated variables from the responses provided by households in the survey. Their responses reported the value of remittances they received at international and domestic levels. Respondents also included the income they derived from employment in the survey. Coping measures reported by households include selling off property, reliance on savings, receipts of regular stipends from associates, and assistance from friends. These are in the model construct.

In addition, based on their shock history from Wave2 in the survey series, respondents were asked to rate the level of the severity of their shock experiences. The first wave in the series comprises data from the 2011/2012 survey, followed by wave 3 data from 2015/2016, and wave 4 data from 2018/2019, forming the most recent dataset used in this chapter's analysis. They classified the intensity of shocks into three: Most-severe, more severe, and severe. We used the responses to the severity questions to categorise households. Price increases, death of someone who sends remittances, nonfarm business failure, loss of property (assets), and loss of income are economic shocks in our classification. Kidnapping, armed robbery, damage to or destruction of a dwelling house, and destruction of harvest by fire are artificial or social shocks.

In the survey, 2346 out of 3870 responded to having suffered at least a form of shock. In the 2346 households that agreed to have experienced shocks, 1429 claimed to have experienced most-severe shocks, while 917 families responded to have suffered less severe shocks (made up of more severe and severe shocks), as shown in table 5.2 under descriptive statistics below.

5.3.2 Descriptive Statistics

Presented below are key descriptive statistics highlighting some of the features of the variables generated and used in this analysis. Table 5.3.2 categorises households regarding the socioeconomic shocks they have suffered over the years. From the

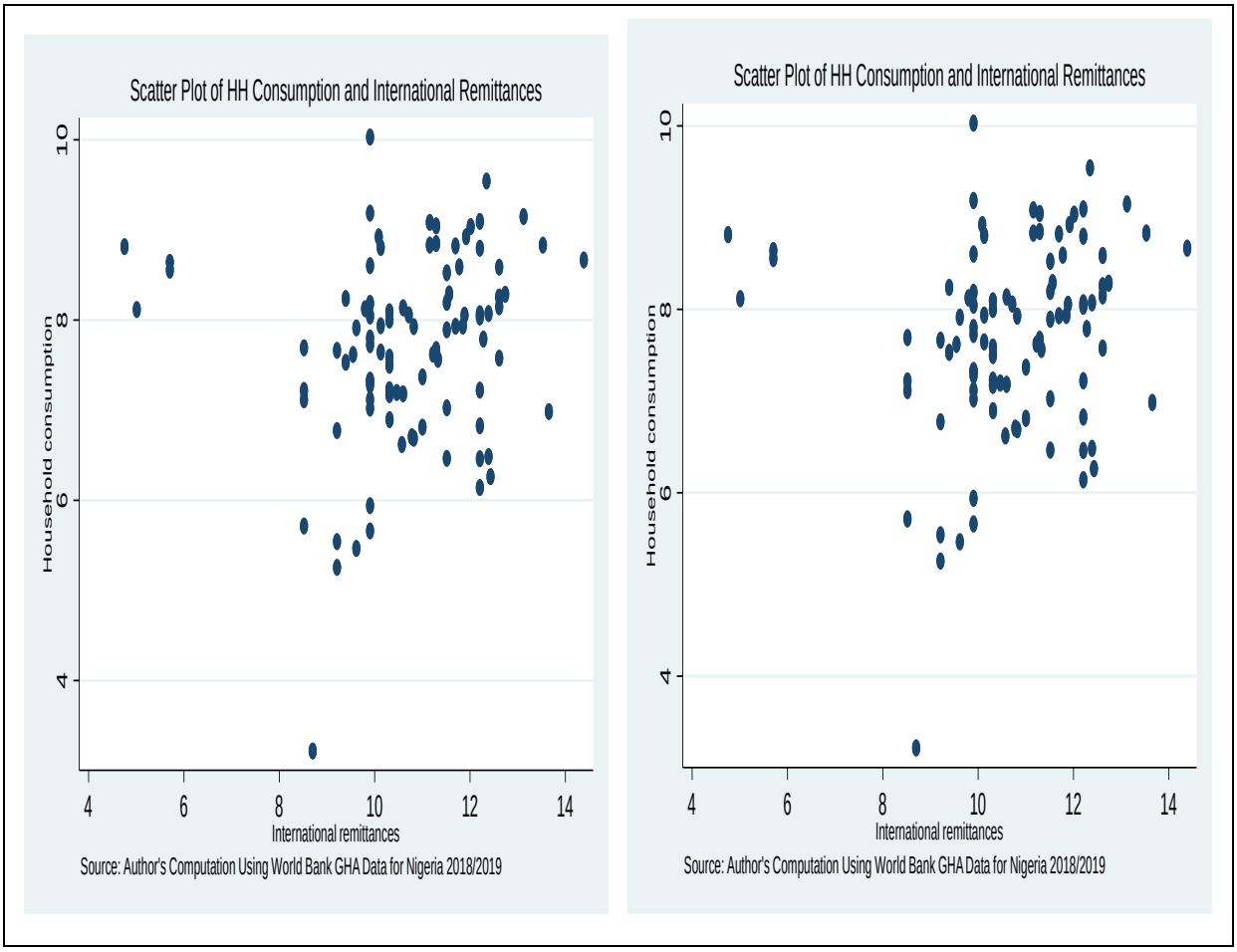
table, the proportion of households that experienced the most severe shocks can be read-off as approximately 61% (1429/2346*100), while those that experienced other shocks are about 39% (917/2346*100). Categorising households in terms of the severity of their shock experiences enables us to objectively analyse how much remittances help households to cope with shock incidences, compared to other coping sources in their post-shock consumption in Nigeria in the absence of effective state interventions. Rather than categorising households based on their poverty status, geography, or using discrete variables to measure micro shock, this study categorises households based on the severity of their shock experiences.

The variables were carefully created from the survey's pertinent Stata files to reflect household income factors (household size, education, number of dependents, location) that have an impact on consumption. The coping strategies used by households can be divided into domestic and external strategies. While domestic sources include domestic remittances, labour hours, employment income, and savings controlling for rural and north-central Nigeria, which assume one (1) and zero (0), International remittances (cash transfers and gifts) are external coping mechanisms. Based on the availability of data, severe and severe shocks as defined in the survey dataset have been combined into one group, leaving only two household categories.

The variable of interest is average household consumption expenditure. Consumption expenditure is undoubtedly the best measure of household welfare, as demonstrated in the introductory part of this chapter. The explanatory variables include international remittances, international gift remittances, and domestic remittances. These variables have been selected based on the findings of previous studies that households experiencing shocks can rely on remittances as a coping measure. Other post-shock explanatory variables reflected in the survey include savings, employment income, sale of livestock, labour hours, reliance on savings, the proportion of household dependents, and other household characteristics as previously defined.

The functional form of a model is of importance. Hence, a descriptive examination of the relationship between our interest variable and some vital explanatory variables, such as international remittances were performed. Fig. 5.2 shows a scatter plot between consumption expenditure and remittances on the left pane of the scatter plot and between consumption and property selling on the right pane of fig. 5.2.

Fig 5.2 Scatter Plot of Consumption and Remittances/ Consumption and Sold property



Source: Author's Computation

The graphs show a positive linear relationship between consumption and remittances and a positive linear association between remittances and sold property. The upward-sloping curves indicate an incremental positive relationship of consumption expenditure as more remittances tend to be received by households. However, fitting an imaginary line through the consumption/remittance observation points shows that some observation points are farther away from the line fit, indicating a case of extreme values. The observation sites in the consumption-sold property plot display a similar pattern, with fewer observation points located not too far away.

To reveal more features concerning the variables in the model, we perform summary statistics, as shown in Table 5.2

Table 5.2 Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Dependent					
Avg. HH consumption exp	2,345	2073.47	3171.482	0	111281.8
Independent					
Total Int remittances	2,345	4907.022	50429.37	0	1770000
Total domestic remittances	2,345	20291.56	79778.22	0	1800000
profits	2,345	20805.91	56001.17	0	1360000
Income from employment	2,345	11570.19	39389.29	0	642000
Education expenses	2,345	10464.56	66861.38	0	2636000
Sold property	2,345	4546.664	17973.42	0	276730
Friends and family	2,345	12228.73	40225.86	0	1255870
Age of HH head	2,345	50.41365	15.30167	17	99
Relying on Savings	2,345	0.089979	0.374083	0	5
Ability to read and write	2,345	3.368443	2.645563	0	27
Labour hours	2,345	10.85075	23.88114	0	203
Household size	2,345	5.440512	3.401086	1	29
Rural sector	2,345	0.724947	0.446636	0	1
North central zone	2,345	0.159062	0.365812	0	1

Source: Author's Computation

The summary statistics in table 5.2 reveal some interesting information about the variables. It shows that average household consumption spending has a mean of 2074 and a maximum value of 118,282, with some household members reporting nothing. The disparity between the extreme values could indicate that households cannot finance consumption due to shock interruptions and for other reasons. Families probably go hungry or rely on charity to feed.

Total remittances have a high value of 1,770,000, a mean of 4907, and a minimum of zero, demonstrating that some households do not get overseas remittances. Total domestic remittances display a similar pattern having a mean value of 20,292 and a maximum of 1,800 000. Compared with international remittances' mean value of 2074 and a maximum of 1,770,000, households receive more domestic remittances than foreign remittances.

5.3.3 Method and Model Specification

The ordinary Least Square (OLS) Estimation technique already discussed in chapter 3 under methodology is used in this chapter's analysis.

5.3.3.1 Model Specification

Equation 5.5 below is the functional f(·) form of our economic model which identifies the vectors of explanatory variables that capture post-shock coping strategies on the average consumption expenditure.

$$InCj = \beta_0 + \beta_1 IDR_j + \beta_0 DCM_i + \beta_0 HC_i + \beta_0 LCC_i \quad \ldots\ldots\ldots\ldots\ldots \quad (5.5)$$

We transform equation 5.5 to 5.5a below to enable econometric analysis and account for any ambiguity.

$$InCj = \beta_0 + \beta_1 IDR_j + \beta_0 DCM_i + \beta_0 HC_i + \beta_0 LCC_i + \mu_i \quad \ldots\ldots\ldots (5.5a)$$

Where:

Where $\boldsymbol{InCj}$ stands for per-person equivalent log of household consumption expenditure, a household well-being measure. According to Angus (2012), consumption is the best indicator of household economic well-being because of the high frequency of recording consumption expenditure, it makes less mistakes and errors than household income, and households attempt to stabilise their consumption over time.

Where $\boldsymbol{IDR_j}$ denotes evidence of household international remittance receipts recorded in the survey. Remittance receipts comprise cash and gifts sent to Nigerian family members by migrants and associates from overseas.

$\boldsymbol{DCM_i}$ denotes domestic coping measures of household ith consumption related to the sale of physical assets such as land property and livestock, reliance on savings, profits, internet access and utilisation, and receiving assistance from friends and family members locally.

$\boldsymbol{Hc_i}$ represents the characteristics of the ith household, including household size, income, savings, and expenditure on education of household members that influence a household's economic well-being. Household characteristics capture the endowments of the family, which measure the extent of a household's productive

capacity and serves as a proxy for permanent income (Olalekan et al. 2011; Tebboth *et al*. 2019).

LCc_i stands for locational characteristics. Household location (rural or urban) or North Central are examples of such variables. Unobserved locational effects control for the model using an explicit description of the locational characteristics. Endogeneity could lead to underestimating the full impact of covariate shocks on household economic well-being (Gunther and Harttgen 2009; Stein and Weisser 2018). A description of the household characteristics (***HC***) also decreases the risk of unobserved household heterogeneity, causing bias (Behrman and Deolalikar 1993; Henríquez Parodi 2022).

μ_i represent the error term and the βs are the parameters to be estimated.

In its general form, the OLS estimation technique is as follows:

$$Y = \beta 0 + \Sigma j{=}1...p\ \beta jXj + e \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.6)$$

Where:

Y is the dependent variable.

β0 is the intercept of the model.

X j corresponds to the jth explanatory variable of the model (j= 1,.. p) and,

e is the random error with expectation σ and variance σ².

To specify our model and to account for the condition of normality of OLS assumption and assume the suitable functional form, the log-transformed in equation (5.6) produces (5.7) as follows:

$$logConexp=\beta_0+\beta_1 logtotalrem+\beta_2 logdomrem+\beta_3 logprofits+\beta_4 logempincome+\beta_5 logeduexp+\beta_6 logsoldprop+\beta_7 logsavings+\beta_8 logassfrdfam+\beta_9 agehhead+\beta_{10} readwrite+\beta_{11} labhrs+\beta_{12} hhsize+\beta_{13} rsector+\beta_{14} nortcentral+ e \ldots\ldots\ldots\ldots \quad (5.7)$$

Where:

logConexp – LogConsexp is the log of a household per consumption expenditure and measures how well a household copes with consumption after experiencing a negative shock. Many authors favour consumption expenditure as the best measure of the

welfare of households in the literature ((Deaton and Grosh, 2000). Thus, to understand how remittances affect the welfare of families in their post-shock coping basket, consumption is deemed key in understanding the relationship logtotalrem.

logtotalrem – This variable is the log of total international remittances received by a household in the survey. The log of total international remittances is a crucial explanatory variable because of the belief in remittances as a source of household welfare in developing countries, given the failure of the domestic financial system to equitably allocate finance to include all households.

logdomrem – Aside receiving remittances from abroad, households equally receive domestic remittances from friends and relatives locally. Logdomrem thus represents such remittances receipts by households. What effects does domestic remittances received has on a household's post-shock consumption.

logprofits – Logprofits are profits log-transformed. As previously defined in chapter three profits are a source of finance to households and are, a good source of coping with consumption expenditure after families experience adverse shocks and in accessing the internet.

logsoldprop – This represents receipts from the sales of property to cope with post-shoc consumption.

logassfrdfam – Assitance received from friends and family in order to cope with post-shock consumption.

Household characteristics – The household or family characteristics in this model include employment income (**logempincome**), education expenditure (l**ogeduexp**), savings (**logsavings**), and age of a household head (**agehhead**). Other family characteristics include the ability to read and write (**readwrite**), labour hour (**labhrs**), the size of a household (**hhsize**), a dummy if a household is located in a rural or urban sector (**rsector**), and if a dummy if household is located in the northcentral geopolitical **(northcentral**) zone of the country.

Household characteristics capture the endowments of the family, which measure the extent of a household's productive capacity and serves as a proxy for permanent income (Olalekan et al. 2011; Tebboth et al. 2019). For instance, the World Economic Forum WEF (2016) defines "*education as the stock of skills, competencies, and other*

productivity-enhancing characteristics". Therefore, education is a variable representing the household's skills. Education attainment, together with other household characteristics such as the nature of the family an individual lives in such as income, household size, and type, are essential in defining access to capital (Basu *et al*. 2001; Maddox 2007; Lindelow 2008; Psacharopoulos and Patrinos 2018). Household characteristics also define consumption Delgado and Miles (1997); Orden *et al.* (2006), and ability to access the internet (Chaudhuri et al. 2005; Swenson and Ghertner 2020). The βs are of course the parameters to be estimated.

5.4 Results

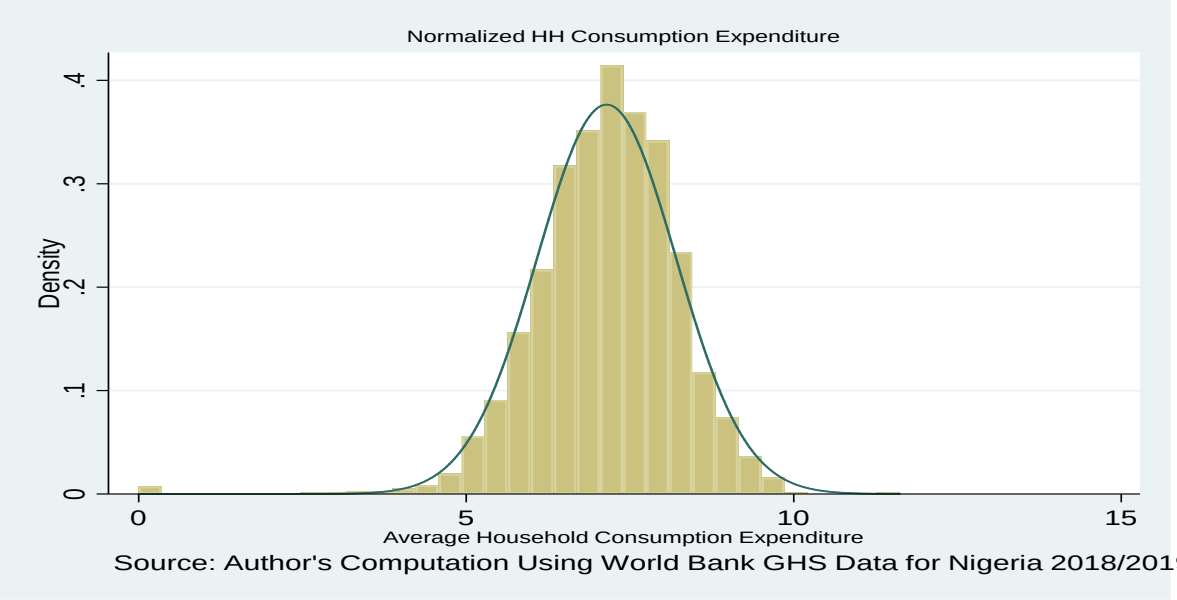
5.4.1 Preliminary Result

Figures 5.2 shows the distribution of log of per head consumption expenditure while figure 5.3 displays the category of shock experiences by severity.

below show some preliminary results before the regression analysis. To understand better how households suffered shocks in the region, a graph concerning the frequency a family suffered a shock, as shown in figure 5.3 is constructed. In the survey, the number of shock occurrences is categorised from 1-to 10 and then 20. However, only one household responded to having suffered shock up to 20 times. This only response is considered way too much of an outlier and thus excluded it from the analysis.

More families have suffered severe shocks, such as arm robbery and displacement. Table 5.4.1 indicates the number of times a household experienced shocks and what category. Homes with the most-severe shock events only once and households that experienced less severe shocks only once were at par at the level as shown at occurrence 1. Otherwise, more families experienced more severe shocks across the board.

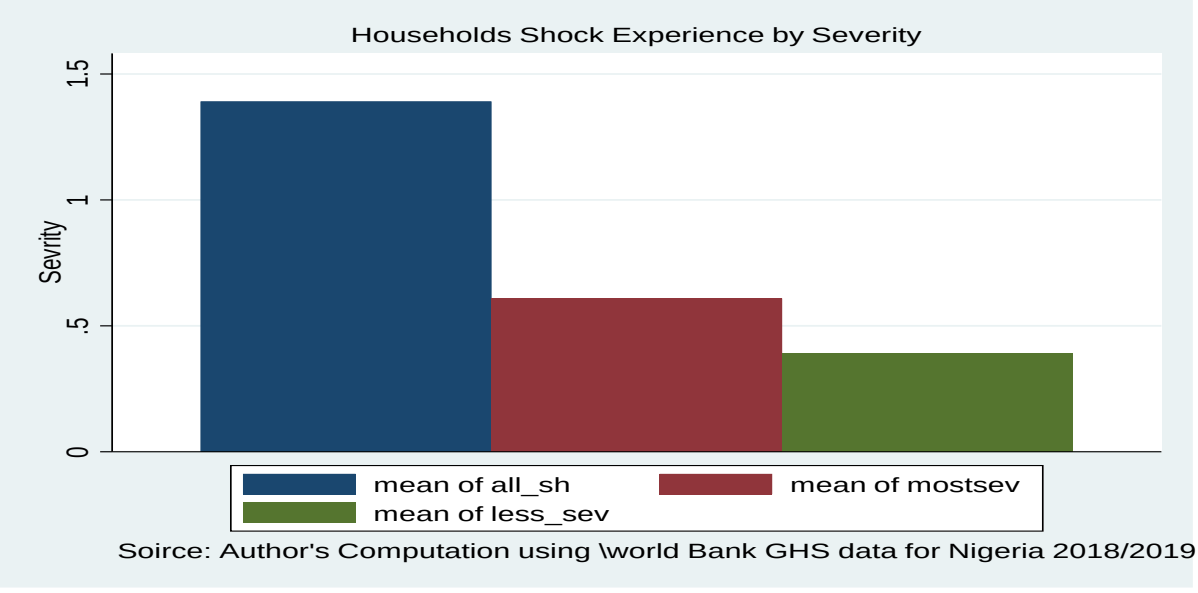
Fig. 5.3 Transformed Distribution Density of HH Consumption Expenditure



After transforming the dependent variable, it fulfils the normality assumption of OLS, as evidenced in fig. 5.3.

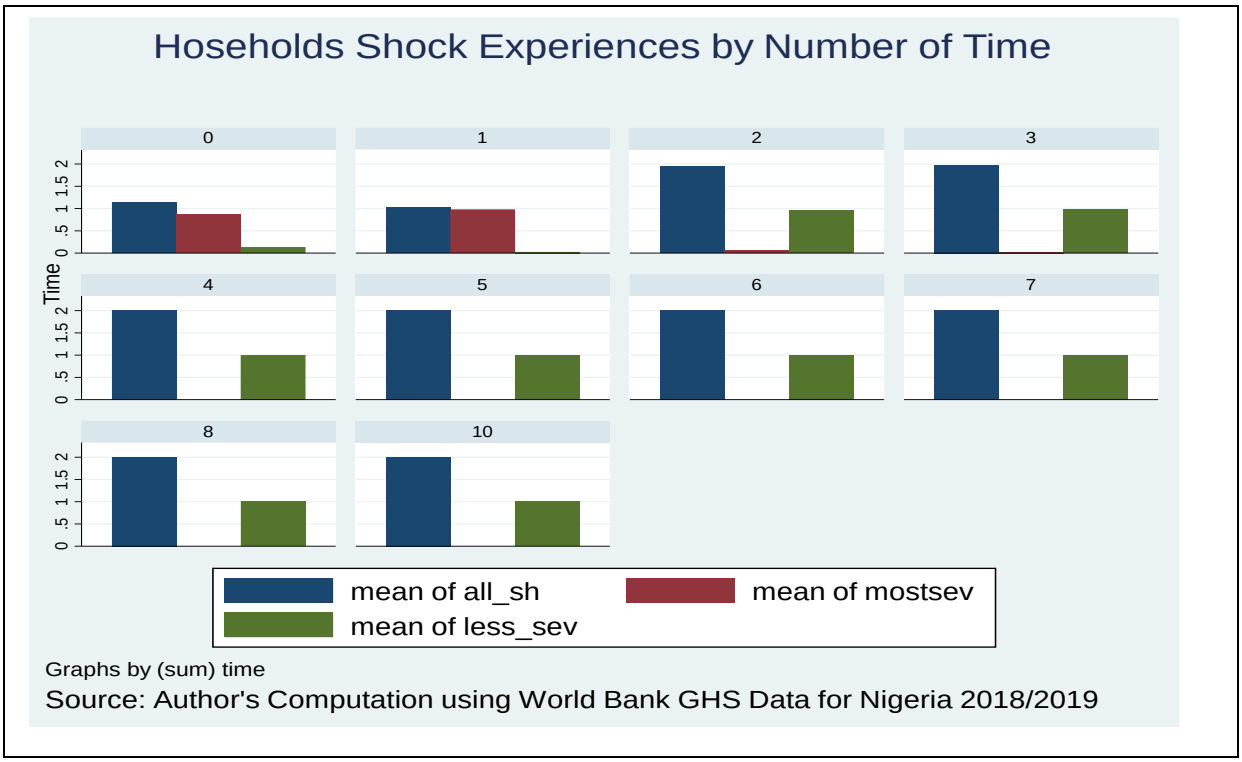
The other monetary variables in equation 5.7 have been log-transformed, just like the variable of interest (consumption expenditure), because they displayed similar characteristics of having extreme values or outliers. Although there is a spike to the left of the distribution around the zero value, it undoubtedly represents households that reported no consumption expenditure in the survey, thus equating to zeros.

Fig. 5.4 Households Shock Experience by Severity



The above chart depicts the severity of household shocks. The blue-coloured bar represents all the households in this study that experienced shock, whether severe or not. The red bar denotes families solely subjected to severe shocks, while the green bar denotes homes subjected to less severe shocks only. The total number of households affected by various surprises recorded in the survey is 2345.

Figure 5.5 Households Shocks Experience by Frequency



Source: Author's Computation

5.4.2 Test of Hypothesis

The hypothesis is tested that there is no difference in their means at the 5% significance level (α = 0.05). In other words, the hypothesis that there is no difference in their means at the 5% significance level (α = 0.05) is tested.

Symbolically, the null hypothesis is stated as:

Ho: μd = 0 …… (5.8)

while the alternative hypothesis:

Ha: μd != 0 ……(5.9)

Equation (5.8) can be restated as: mean diff = Mean(a) – Mean(b) = 0

Where:

Mean(a) = Mean of households that experienced the most severe shocks and mean (b) = mean of families that experienced less severe shocks. To conduct the test, I first generate a variable for the hypothesised difference in mean. We call this variable "diff" and then perform a paired t-test, as shown in table 5.3.

Table 5.3 Mean Comparison t-test for mostsev and less_sev Per HH Consumption Expenditure

Paired t-test

Variable	Obs.	Mean	Std. Err.	Std. Dev.	[95% Conf.	interval
mostsev	2,345	0.6089552	0.0100792	0.488089	0.58919	0.6287203
less_sev	2,345	0.3910448	0.0100792	0.488089	0.37128	0.4108099
diff	2,345	0.2179104	0.0201584	0.976177	0.17838	0.2574407

mean(diff) = mean (mostsev - less_sev) **t** = 10.8099

degree of freedom = 2344

Ho: mean(diff) = 0

Ha: mean(diff) < 0 **Ha**: mean(diff)! = 0 **Ha**: mean(diff) > 0

Pr (T < t) = 1.0000 Pr (T > t) =0.0000 Pr (T > t) = 0.0000

Source: Author's Computation

The paired mean comparison test indicates a statistically significant difference between the means of the two groups. That is to say that the coping measures of the two groups using international remittances are significantly different. Thus, there is no sufficient reasons to accept the null hypothesis but to accept the alternative that the means of the two groups are different. The significant t statistic of 10.8099 with Pr (T > t) = 0.000 indicates that there is indeed a difference in the post-shock consumption coping measures using remittances between households that experienced the most devastating types of shock disruptions and homes that experienced lesser degrees of shocks.

5.4.3 Regression Results

The regression outcomes are shown in Table 5.4 below. Four variations of the estimation have been done. First, while controlling for household characteristics, the link between remittances and households' spending whilst using just external sources as a coping mechanism is assessed. The impacts of home coping strategies are then compared to those of outside sources on consumption in the second round, while once more adjusting for household factors as shown in Table 5.4.

Table 5.4 Estimation Result of the Link Between Remittances and the Post-Shock Household Consumption Expenditure

Variables	**Log of Per Household Consumption Expenditure**					
	All Households		**Most Severely Affected HH**		**Less-severely Affected HH**	
Inter. remit.	0.0286***	0.0255***	0.0278**	0.0277***	0.0293*	0.0269*
	(0.0090)	(0.0089)	(0.0113)	(0.0097)	(0.0150)	(0.0148)
Dom. remit.	0.0144***	0.0124***	0.0086	0.00955**	0.0233***	0.0211***
	(0.0040)	(0.0040)	(0.0053)	(0.0044)	(0.0061)	(0.0060)
Profits		0.0274***		0.0255***		0.0257***
		(0.0041)		(0.0045)		(0.0063)
Employ income		0.0162***		0.0173**		0.0313***
		(0.0062)		(0.0067)		(0.0098)
Education exp		-0.0145***		-0.0148***		-0.0114
		(0.0050)		(0.0055)		(0.0075)
Sold property		0.0074		0.0062		0.0089
		(0.0059)		(0.0071)		(0.0077)
Friends/family		0.00783*		-0.0078		-0.0088
		(0.0042)		(0.0048)		(0.0058)
Savings		0.1150		0.2740		0.1150
		0.1760		0.3260		0.1760
Age of HH	-0.00339***	-0.00236*	-0.00367**	-0.00208	-0.00276	-0.00159
	(0.0013)	(0.0013)	(0.0017)	(0.0014)	(0.0020)	(0.0020)
Read/write	0.500***	0.432***	0.546***	0.466***	0.410***	0.336***
	(0.0613)	(0.0621)	(0.0798)	(0.0684)	(0.0954)	(0.0973)
Labour hours	0.0134***	0.0106***	0.0173***	0.0109***	0.0064	-0.0027
	(0.0029)	(0.0038)	(0.0037)	(0.0041)	(0.0047)	(0.0061)
HH Size	-0.101***	-0.106***	-0.103***	-0.110***	-0.0996***	-0.108***
	(0.0057)	(0.0063)	(0.0077)	(0.0071)	(0.0084)	(0.0093)
1.rsector	-0.403***	-0.337***	-0.367***	-0.319***	-0.484***	-0.405***
	(0.0450)	(0.0455)	(0.0576)	(0.0494)	(0.0728)	(0.0735)
1.north_central	-0.159***	-0.134**	-0.163**	-0.123**	-0.171**	-0.141*
	(0.0528)	(0.0530)	(0.0727)	(0.0592)	(0.0766)	(0.0778)
Constant	7.765***	7.564***	7.718***	7.548***	7.881***	7.648***
	(0.0935)	(0.0974)	(0.1230)	(0.1070)	(0.1440)	(0.1540)
Observations	2,345	2,345	1,976	1,976	917	917
R-squared	0.247	0.268	0.253	0.271	0.261	0.287

Standard errors in parentheses (*** p<0.01, **p<0.05, *p<0)

Thirdly, to understand the sensitivity of rural households to the use of international remittances as a coping measure, the variable rsector (i.e., households' resident in the rural sector) and international remittances were interacted. The interaction results for all class of estimation are displayed in Table 5.5 below.

Table 5. 5 Interaction Effects

Variables	Log of Per Household Consumption Expenditure					
	All Households		Most Severely Affected HH		Less-severely Affected HH	
Inter. Remit.	0.0101	0.00688	0.00841	0.00591	0.0248	0.018
	(0.0126)	(0.0125)	(0.0136)	(0.0135)	(0.0205)	(0.0202)
Dom. Remit.	0.0142***	0.0122***	0.0111**	0.00945**	0.0232***	0.0209***
	(0.0040)	(0.0040)	(0.0044)	(0.0044)	(0.0061)	(0.0060)
Profits		0.0273***		0.0252***		0.0259***
		(0.0041)		(0.0045)		(0.0063)
Employ income		0.0163***		0.0174***		0.0314***
		(0.0062)		(0.0067)		(0.0098)
Education exp		-0.0145***		-0.0148***		-0.0114
		(0.0050)		(0.0055)		(0.0075)
Sold property		0.00775		0.00669		0.00901
		(0.0059)		(0.0071)		(0.0077)
Friends/family		0.00789*		0.00783		0.00885
		(0.0042)		(0.0048)		(0.0058)
Savings		0.116		0.278		0.115
		(0.1760)		(0.3260)		(0.1760)
Age of HH	-0.00334***	-0.00231*	-0.00285**	-0.00201	-0.00275	-0.00155
	(0.0013)	(0.0013)	(0.0014)	(0.0014)	(0.0020)	(0.0020)
Read and write	0.498***	0.431***	0.546***	0.464***	0.410***	0.336***
	(0.0612)	(0.0620)	(0.0670)	(0.0683)	(0.0955)	(0.0973)
Labour hours	0.0134***	0.0105***	0.0142***	0.0109***	0.00629	-0.00283
	(0.0029)	(0.0038)	(0.0031)	(0.0041)	(0.0047)	(0.0061)
Household size	-0.100***	-0.106***	-0.103***	-0.109***	-0.0997***	-0.108***
	(0.0057)	(0.0063)	(0.0064)	(0.0071)	(0.0084)	(0.0093)
1.rsector	-0.424***	-0.358***	-0.408***	-0.345***	-0.489***	-0.415***
	(0.0461)	(0.0466)	(0.0499)	(0.0505)	(0.0746)	(0.0751)
1.north_central	-0.158***	-0.133**	-0.134**	-0.123**	-0.171**	-0.139*
	(0.0528)	(0.0530)	(0.0588)	(0.0591)	(0.0767)	(0.0778)
1.rsector#c.Intotinterem	0.0371**	0.0374**	0.0470**	0.0451**	0.00969	0.019
	(0.0179)	(0.0177)	(0.0195)	(0.0193)	(0.0297)	(0.0293)
Constant	7.778***	7.577***	7.727***	7.561***	7.885***	7.654***
	(0.0937)	(0.0975)	(0.1030)	(0.1070)	(0.1450)	(0.1540)
No. of Obs.	2,345	2,345	1,976	1,976	917	917
R Squared	0.247	0.268	0.253	0.271	0.261	0.287

Standard errors in parentheses (*** p<0.01, **p<0.05, *p<0)

The findings/ discussion of the regression outputs follows.

5.4.4 Discussion of Results/ Findings

The explanatory variables were regressed on the log of per household consumption expenditure, the variable of interest as shown in table 5.4 The results reveal that the overall model fit is moderately positive, with an R^2 of 0.26 for all homes, 0.25 for the most severely affected households, and a higher rate of 0.29 for families that suffered less-severe shocks. However, the study's interest lies more in the regressors' coefficients and their relation to average household consumption expenditure than the overall fit. To this end, total overseas remittances are large and favourable to post-shock household consumption and returns significant at the 1% level for all families, 5% for households who experienced less devasting shock events and only at the 10% level for homes that experienced the most devasting shock events.

The result indicates further that a 1% (percentage) change in remittances results in a corresponding change in consumption for all households (0.0258) and the most severely affected homes (0.0212). A percentage shift in foreign remittances would link a 0.03 per cent change in household spending for households who have experienced fewer shocks. The result provides evidence that when the degree of shock experienced by a home is less severe, the influence of remittances on post-shock consumption is more remarkable. Nonetheless, it has calming effects on households that have experienced more brutal shocks while trying to cope with consumption.

Domestic remittances are only statistically significant for all households and those that experienced less severe shocks at the 1% significance level. If all other variables remained constant, a change in domestic remittances as a percentage would lead to a proportionate shift of 0.012 in the log of the average consumption for all households and a change of 0.022 for households who experienced less severe shocks. According to the outcome, local remittances are insufficient to be used as a post-shock consumption indicator. For instance, it could be difficult to transfer money to a family whose home was damaged and forced them to move, especially if they are seeking refuge in an Internally Displaced Persons (IDP) camp. Families that are uprooted by conflict or tragedy lose all their belongings, including bank account information, making it difficult for friends and family to get in touch with them. Employment income has a similar effect to domestic remittances. It matters for all households, including those that suffered fewer shocks. When school children are abducted and their parents are

forced to relocate because of these shocks, they lose their sources of income, and their kids may face.

Profits from non-income generating activities such as trading, and artisanship are significant across the board. A percentage point increase in profits can equal a one-percentage-point shift in the log of average household consumption; 0.0265 for all households; 0.0259 for the most severe homes; and 0.0270 for the less severely affected households. The significance of profit from non-farm business activities across the board shows the relevance of earnings as a source of funding household post-shock consumption. As expected, education expenses hurt all households' post-shock consumption coping strategies. The degree of negative impact, on the other hand, is higher for all families, particularly those that have experienced the most severe sorts of shocks. Selling-off property by households to cope with consumption due to shocks returned insignificant. This could be to the fact that most sale of property are made at their break-up (forced) values, and funds realised from such sales are known to be far less than their actual market values. Finding buyers in the middle of a crisis is also another factor.

The family's post-shock consumption coping is inversely related to the age of a household's head. This is interpreted to mean that as a household advances in age, his ability to fend for the home became weaker and weaker due to age and within a crisis. Rural households suffer more, with as much as (36 – 42%) dealing with consumption post-shock than their urban counterparts. The implication might be that staying in the rural area puts a family's consumption more at risk because extra shock could cause a drop in consumption equal to the mentioned amounts.

Regressing the explanatory variables on the log of per household consumption expenditure to determine the influence of remittances on post-shock consumption as shown in Table 5.4 reveal that the overall model fit is moderate, with an R^2 of 0.26 for all homes, 0.25 for the most severely affected households by shocks, and a higher rate of 0.29 for families that suffered less severe shocks when only external sources plus household characteristics are considered. On the other hand, when the domestic sources are factored into the regression equations, overall model fit dropped considerably. The moderate overall fit of the models not with withstanding, the

regressors' coefficients and their relation to average household consumption expenditure are of more interest.

Total overseas remittances are large and favourable to post-shock household consumption. While it is significant at the 1% level for all families, it is only effective as a coping measure at the 5% level for households who experienced less-devasting shock events. However, remittances are only significant at the 10% level for homes that experienced the most devasting shock events. A percentage change in remittances results in a corresponding change in consumption for all households (0.0258%) and the most severely impacted homes (0.0212%). A percentage shift in foreign remittances would cause a 0.03% change in families that experienced shocks of a less devasting nature. The result supports the suggestion that when the degree of shock experienced by a home is less severe, the influence of remittances on post-shock consumption is more remarkable. Nonetheless, it has calming effects on households that have experienced more brutal shocks while trying to cope with consumption.

5.5 Conclusion

According to the study's findings, using domestic resources such as profits from commercial activities to smooth post-shock consumption rather than relying on international remittances is much more effective for households. This finding confirms Ratha (2013) claim that remittances can only augment an individual's income and increase his/ her Country's foreign exchange reserves notwithstanding that if consumed, they also generate positive multiplier effects according to the study and as demonstrated in the current investigation. However, in terms of the class of households investigated, when remittances are used as a coping strategy, the group of households that suffered the less-severe shock-types benefit more compared to the group that experienced more catastrophic shocks. This new strand of evidence is in line with Alem and Andersson (2019) study which demonstrates that although getting domestic remittances has no much impact on families, obtaining international remittances raises the value of private domestic interhousehold transfers.

The relative low effectiveness of remittances as a coping measure compared to profits could be the result of several factors. These factors could include the amount and the regularity of remittances received by households, migrant workers who usually

transmit remittances being unable to send remittances owing to unforeseen events at destination, among other things. This ties once more to the finding of Le De *et al.* (2013) that remittances can be both a strength that helps people deal with shocks and recover from them, and a weakness formed within the context of vulnerability. While profits have returned from the analysis as the most significant measure in a households' post-shock consumption, to make profit from a business, however, requires access to affordable finance which is extremely difficult for poor households to obtain. The findings point to the failure of existing the financial system to make financing accessible to willing households and the inability of the government to create a violent-free environment that enables a business to thrive as grave hindrances in this regard. The results therefore have some policy implications. If proven households that have experienced shocks can affordably access finance for trade, they are more likely to alleviate the effects of the shocks by consuming the gains created by trading. According to Peachey and Roe (2004), a large portion of households in most developing regions are excluded from the domestic financial system's availability of credit due to a number of issues, including unemployment and illiteracy.

5.6 Policy Implication, and the Need for Future Research

The results therefore have some policy implications. If proven households that have experienced shocks can affordably access finance for trade, they are more likely to alleviate the effects of the shocks by consuming the gains created by trading. Peachey and Roe (2004), assert that, for a variety of reasons, including unemployment and illiteracy, a sizable fraction of households in most developing nations are not eligible for credit through the domestic banking system. Thus, the findings have some policy ramifications. Households that have undergone shocks are more likely to lessen the effects of the shocks by consuming the gains from trading if they can afford to access finance for trade.

It is therefore suggested that creating a discriminating finance market that classifies households into categories of shock-affected and non-shock-affected households and favouring the shock affected would help relieve the difficulties experienced by households in managing post-shock spending. Such a market would allow households affected by shocks to access finance almost for nothing, which they might utilize to fund successful endeavours. It is also advised to create a campaign to raise awareness about saving so that households understand the value of saving some of

the remittances they receive when there is little or no shock so that they can use those funds to finance consumption and non-farm businesses when a crisis occurs. Profits from these companies' revenues can increase a family's ability to weather financial hardship; as a result, if a sizeable portion of the remittance is set aside for savings, it can eventually lead to significant economic growth, as shown in Salahuddin *et al*. (2021) analysis of Bangladesh.

Results also imply that if families who have undergone shocks have access to trade finance, they are more likely to lessen the consequences of the shocks by using the gains from trade for consumption smoothing in addition to using profits to smooth consumption. Sincere policymakers will be able to make loans available to support businesses that families can rely on in times of crisis by addressing the qualitative drivers of shocks. To at least stem the rising number of displaced households caused by rebel attacks on dwellings, the government must step up its efforts to combat this issue. Otherwise, the trickle of remittance benefits would completely be negligible.

CHAPTER 6. THE EFFECTS OF INTERNATIONAL REMITTANCES ON HOUSEHOLDS' INTERNET ACCESS

6.1 Introduction

Remittances have typically been sent via normal channels like banks and person to person as tangible presents or cash (De Haas 2008). In Nigeria, however, the prohibitive cost of internet access has prevented many households from sufficiently using it. Therefore, many families now rely on remittance receipts to directly top-up their phone lines with data bundles and airtime so they may use the internet for a variety of purposes. While this fact stares us in the face, there is little to no evidence in the prior literature that has investigated this novel method of sending and receiving remittances has been thoroughly studied in the context of a developing Country. This chapter therefore contributes to the literature by investigating how remittances affects the ability of households to access and use the Internet for welfare-improving activities in Nigeria.

The internet has enabled digital transformation in every sphere of life across the World according to Schallmo *et al*. (2018), and that includes households' welfare enhancing activities. However, in Nigeria, as in many other developing countries, families continue to find it challenging to use the internet for various objectives. Some hindrances to access include the cost, low digital penetration, poor broadband internet and infrastructure (Drake *et al*. 2019; Alvarez Jr 2021). A fundamental result is that poor households get excluded from internet-based trade and other transactions like online education (Palvia *et al.* 2018). Consequently, they cannot gain access to the essential knowledge that might improve their well-being in an ever-expanding digital world.

Internet usage is impeded as a result of the high costs of internet access, liberalisation and regulation in many developing countries and thus constitute a barrier to many households accessing the internet (Milne 2001). Many households therefore seek alternative sources of finance, such as the receipt of monies from abroad and gifts to fund their internet access. This incapacity partly stems from a lack of, or insufficient supply of traditional financing and the government's failure to offer significant social benefits to offset the problem. Powered by money mobile transfer services, households can now rely on remittances receipts to fund their access and use of the internet (Merritt 2011; Yoshino et al. 2017).

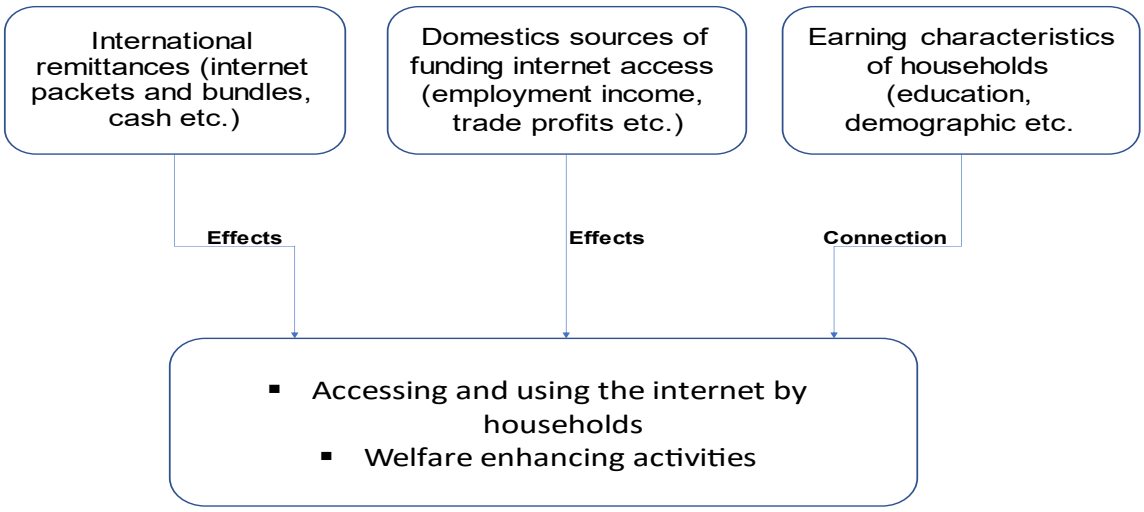
E-platforms and remittance channels such as WorldRemit, OrbitRemit, Moneygram, Money2India, Azimo, and others have sprung up as the internet and digitalisation have enabled cross-border bank-to-bank transactions (Camacho 2022). Migrants' remittances to family members left behind have gotten significantly more accessible because of the internet (Hassan and Jebin 2020). Before the internet surge, remittances were typically sent via physical means such as person-to-person, return migrants, agents' companies, and bank transactions. Returning migrants may contribute remittances in skills transfers if they have obtained skills critical to driving growth in their sending nations (Opong 2012). Each of which has its own set of merits and demerits.

According to a review of relevant literature, sending remittances from High-Income-Countries (HICs) to Low-and-Medium-Income-Countries (LMICs) can provide an alternative source of finance for households. Remittances are often well targeted to the requirements of their recipients (Seth et al., 2015). Anyanwu et al. (2016) confirms that, remittances can help to minimise income inequality and boost household welfare.

6.1.1 Conceptual Framework

The conceptual idea behind this analysis is presented below in the flow diagram in figure 6.1. It categorises the sources of funding internet consumption by households into three namely international remittances, domestic sources of finance and the earning characteristics of households.

Fig. 6. 1 Framework Linking Remittances to Households Internet Access



Source: *Author's Conceptual Framework*

The framework highlights the effect of remittances (subdivided into international and domestic remittances) on the internet access ability of households. Based on our conceptual framework above, we attempt to ask what impact remittances have on households' access to and utilising the internet for welfare-enhancing activities?

6.1.2 The Idea of Internet Access and the Welfare of Households

The capacity of households to link to the Internet through computers and other digital devices to use services like emails, online content creation, marketing, and the World Wide Web, is known as access to the Internet by households. According to the OECD (2017), According to the OECD (2017), the percentage of households reporting having access to the Internet is used to gauge the proportion of households that can access and utilise it. The report emphasizes that, almost always, a personal computer with dial-up, ADSL, or fibre broadband connection is used for this access. This indicator's value is expressed as a proportion of all households. Linked to the welfare of households in the era of digital dispensation, Flamm and Chaudhuri (2007) found that different socioeconomic factors may have varied effects on the choice of a household or an individual upgrading to bandwidth and the option to buy internet access at all which may depend on price elasticity.

From the OECD and Flamm and Chaudhuri' definitions, it means that cost of access is central to households' ability to do so. Reddick *et al*. (2020) looked at the "determinants of broadband access and affordability" in a developed nation like the United States and discovered, among other things, that social exclusion, affordability factors, geographic disparities, social-economic factors (inequality, race, age, education etc.), and profit-based discrimination (aim to a good return by providers) are some of the determinants of access and are equally responsible for the so called internet divide in the USA. Findings by Kaliisa *et al*. (2019) research on "mobile learning and Practice in Africa: towards inclusive and equitable access to higher education" produced findings that are consistent with those of Reddick et al. The results of Kaliisa *et al*. (2019) show that major resource disparities and institutional, social, and epistemological hurdles still exist and impact the adoption of mobile learning. The data also shows a lack of institutional and government initiatives in

African higher educational institutions that specifically address learning via mobile devices.

Although households in developed nations may have more options and better ways to pay for their internet use, including public support programmes, these findings seriously affect the welfare of low-income households in emerging nations like Nigeria, where many people are economically-disadvantaged. For instance, a household would be prevented from participating in internet-enabled economic activities like e-commerce and content creation (skit making), which many unemployed youths in the nation have turned to due to the high level of unemployment, which would have a negative impact on welfare. This makes relying on remittances a particularly alluring choice for people looking to finance their online activity.

6.1.3 Research Question and Test of Hypothesis

The third and final specific objective of this thesis is to examine how remittances help households to connect to and use the internet for home welfare-enhancing activities. For this purpose, remittances are regarded as cash and internet packets and bundles. These are controlled for using domestic sources of finance such as income and households earning characteristics to determine their effect on households' internet access and use.

The idea, represented in a conceptual framework has enable the construction of the research question to guide this analysis.

3.1.3.1 Research Question

How does the receipt of foreign remittances affect the ability of households to access and use the Internet for welfare-improving activities?

3.1.3.2 Hypothesis

The hypothesis to be tested here is that foreign remittances have no effect in the ability of households to access and use the Internet for welfare-improving activities.

The remaining part of this chapter is arranged as follows. Section 6.2 discusses theoretical and empirical literature while data and method of analysis including model specification are discussed in section 6.3. Results are presented and discuss in

section 5.4 while section 5.5 concludes this chapter with some recommendation and the need for more research on the subject.

6.2 Literature Review

According to Kahn (1999) the underpinning of the internet is by the global interconnection of hundreds of otherwise independent computers, communications entities, and information systems. According to the study, it is the worldwide connection tool for individual networks run by governments, industry, universities, and private actors. It was to connect a few actors, primarily institutional. However, its use has progressed from its original intended application to every other thing in human history (Gravili 2018).

Therefore, the evolution of the internet space over time has become the super gateway for the world's economic and social activities. This notion aligns with Castells (2014), who believes that as the electrical engine was the vector of technical innovation in the industrial era, the internet is the powerful technology of the digital age. Haroon (2016) opine that technology, powered by the internet, has revolutionised the way humans interact, socialise, communicate, work, and share ideas and information all around the World.

Huizer (2017) believe at while the internet is supposed for everyone, it has not happened for everyone. According to the study, access to the internet is critical for certain groups, particularly women, to gain empowerment by connecting them to global markets and networks. However, women in Africa are 50% less likely than men to be online, and there exist digital gaps that harm those with impairments and those who lack digital skills. As demonstrated in Huizer’s study. In addition, not all residents have the same access to and skilled use of information and communications technologies (Zhang et al. 2020).

Lack of access means that, while governments and many corporations, including banks, have embraced, and made it inexpensive, regular users, particularly impoverished rural households in developing nations, are hampered by cost, talent, infrastructure, and penetration. According to Bakardjieva (2005), analysts have seen ordinary users not involved as not a professional (engineers, programmers, designers)

as the person for whom technological innovation arrives last, but who nevertheless represents the ultimate target of innovation's products.

6.2.1 Internet Access and the Welfare of Households.

Every productive venture the World over now, directly, or indirectly, depends on automation and the internet. Owners and managers of production resources more than ever before now heavily rely on the internet: from software proprietary and patent rights to manufacturing; from the academia to transport; from entertainment to investment and Banking; from public to private. Like businesses, individuals and households also rely on the internet for their day-to-day activities: From shopping to personal investments; international and local cash transfers using mobile apps; creation of commercial videos; insurance payments; paying school fees and subscriptions; general household shopping etc. In most developed economies, the rate at which individuals and households link their daily activities such as health and wellbeing is tremendous (Kearns and Whitley 2019). Also, the Office for National Statistics - ONS (Office for National Statistics, 2019) estimates that 87 per cent of adults utilised the internet at least once a day in 2019 and rose 87 per cent of adults used the internet at least once a day.

According to estimates from an Internet Use Survey (IUS), more than half of American households in 2019 use the internet to communicate with health professionals, access health records, and research health information (Goldberg 2020) quoting the National Telecommunications and Information Administration (NTIA) of the United States Department of Commerce. The report says that households accessing health or health insurance records online increased from 30% in 2017 to 34% in 2019. At the same time, 51% use the internet for any health-related issues, while the total fixed residential (households) connection as of June 2018 (made up of an aggregate fix, 99742.

Mobile wireless equalled 259,109M, according to statistics released by the Industry Analysis Division Office of Economics & Analytics of the Federal Communication Commission (FCC) of the United States. The level of use in the USA was before the outbreak of the Covid-19 pandemic. In Thomala (2023), as of December 2020, about 70.4 per cent of the Chinese population had used the internet, while the worldwide average internet penetration rate had resided at about 59 per cent as of January of

that same year. In the internet trend, although developing countries are not left behind, as shown in table 6.2a, their relative rate of usage calls to question.

Table 6. 1 World Internet Usage and Population Statistics 2019 Year-End Estimate

World Regions	Population (2020 Est.)	Population %of World	Internet Users 31 – Dec 2019	Penetration (Rate % Population)	Growth 2000 - 2020	Internet World %
Africa	1,340,598,447	17.20%	526,374,930	39.30%	11559 %	11.50%
Asia	4,294,516,659	55.10%	2,300,469,859	53.60%	1913%	50.30%
Europe	834,995,197	10.70%	727,814,272	87.20%	592%	15.90%
Latin America / Caribbean	658,345,826	8.50%	453,702,292	68.90%	2411%	10.00%
Middle East	260,991,690	3.90%	180,498,292	69.20%	5395%	3.90%
North America	368,869,647	4.70%	348,908,868	94.60%	222%	7.60%
Oceania / Australia	42,690,838	0.50%	28,775,373	67.40%	277%	0.60%
WORLD TOTAL	7,796,615,710	100.00%	4,574,150,134	58.70%	1167%	100.00 %

Source: Miniwatts Marketing Group 2020

6.2.2 Cost of Internet Access in Nigeria

The projected population was 206,139,589 by 2020. This figure accounts for about 62939% growth between 2000 and 2020 (within 20 years), with an active Facebook subscriber of 27,120,000 people. These figures are outside of other platforms such as WhatsApp, Instagram, Twitter, and YouTube. These platforms are only accessible via the internet. The various platforms have evolved into the world marketplace, with participants ranging from teeming unemployed youths to rural agricultural households trying to eke out a living by engaging in non-farm income-generating activities in developing countries as a diversification strategy. Internet access plays a critical role

in the process. While the internet penetration rate in Nigeria is deep, the cost of internet bundles for poor households has made them even more financially excluded.

Table 6. 2 Africa Internet Usage and Population Statistics 2019 Year-End Estimate

AFRICA	Population (2020 Est.)	Internet Users 31-Dec 2000	Internet Users 31-Dec 2009	Penetration (% Population)	Internet Growth % 2000 - 2020	Facebook Subscribers 31-Dec 2019
Algeria	43,851,044	50,000	25,428,159	58.00%	50756%	19,000,000
Angola	32,866,272	30,000	078,067	21.50%	!3493%	2,244,000
Benin	12,123,200	15,000	3,801,758	31.40%	25245%	920,000
Botswana	2,351,627	15,000	1,116,079	47.50%	6455%	830,000
Burkina Faso	20,903,273	10,000	3,704,265	17.70%	36942%	840,000
Burundi	11,890,784	3,000	1,154,568	9.70%	38385%	450,000
Cabo Verde	555,987	8,000	352,120	63.30%	4302%	240,000
Cameroon	26,545,863	20,000	6,128,422	23.10%	30542%	2,700,000
Central African Rep.	4,829,767	1,500	655,466	13.60%	43597%	122,100
Chad	16,425,864	1,000	1,027,932	6.30%	102693%	328,000
Comoros	869,901	1,500	178,500	20.50%	11800%	178,500
Congo	5,518,087	500	732,800	13.30%	146460%	732,800
Congo, Dem. Rep.	89,561,403	500	7,475,917	8.30%	1495083%	3,117,000
Cote d'Ivoire	26,378,274	40,000	11,953,653	45.30%	29784%	4,758,000
Djibouti	988,000	1,400	548,832	55.50%	39102%	211,700
Egypt	102,334,404	450,000	49,231,493	48.10%	10840%	42,400,000
Equatorial Guinea	1,402,985	500	356,891	25.40%	71278%	100,600
Eritrea	3,546,421	5,000	293,343	8.30%	5766%	21,900
Eswatini	1,160,164	10,000	665,245	57.30%	6552%	255,200
Ethiopia	114,963,588	10,000	20,507,255	17.80%	204972%	6,007,000
Gabon	2,225,734	15,000	1,307,641	58.80%	8617%	743,000
Gambia	2,416,668	4,000	442,050	18.30%	10951%	370,100
Ghana	31,072,940	30,000	11,737,818	37.80%	39026%	4,900,000
Guinea	13,132,795	8,000	2,411,672	18.40%	30046%	2,008,000
Guinea-Bissau	1,968,001	1,500	250,000	12.70%	16567%	140,000
Kenya	53,771,296	200,000	46,870,422	87.20%	23335%	7,000,000
Lesotho	2,142,249	4,000	682,990	31.90%	16975%	445,600
Liberia	5,057,681	500	624,610	12.30%	124822%	537,000
Libya	6,871,292	10,000	5,100,000	74.20%	50900%	5,094,000
Madagascar	27,691,018	30,000	2,643,025	9.50%	8710%	2,317,000
Malawi	19,129,952	15,000	2,717,243	14.20%	18015%	500,200
Mali	20,250,833	18,800	12,480,176	61.60%	66284%	1,670,100
Mauritania	4,649,658	5,000	969,519	20.90%	19290%	796,900
Mauritius	1,271,768	87,000	852,000	67.00%	879%	852,000
Mayotte (FR)	272,815	n/a	107,940	39.60%	n/a	91,400
Morocco	36,910,560	100,000	23,739,581	64.30%	23639%	18,330,000
Mozambique	31,255,435	30,000	6,523,613	20.90%	21645%	2,448,000
Namibia	2,540,905	30,000	1,347,418	53.00%	4391%	692,400
Niger	24,206,644	5,000	2,781,266	11.50%	55525%	500,200
Nigeria	**206,139,589**	**200,000**	**126,078,999**	**61.20%**	**62939%**	**27,120,000**
Reunion (FR)	895,312	130,000	553,000	61.80%	325%	544,000
Rwanda	12,952,218	5,000	5,981,638	46.20%	119532%	592,400
Saint Helena (UK)	6,077	n/a	2,300	37.80%	n/a	2,300
Sao Tome & Principe	219,159	6,500	63,864	29.10%	882%	58,400
Senegal	16,743,927	40,000	9,749,527	58.20%	24274%	3,408,000
Seychelles	98,347	6,000	71,300	72.50%	1088%	71,000
Sierra Leone	7,976,983	5,000	1,043,725	13.10%	20774%	693,400
Somalia	15,893,222	200	1,705,300	10.70%	852550%	1,666,500
South Africa	59,308,690	2,400,000	32,615,165	55.00%	1259%	21,280,000
South Sudan	11,193,725	n/a	887,722	7.90%	n/a	282,901
Sudan	43,849,260	30,000	13,124,100	29.90%	43647%	1,300,000
Tanzania	59,734,218	115,000	23,142,960	38.70%	20024%	4,271,000
Togo	8,278,724	100,000	1,011,837	12.20%	912%	658,100
Tunisia	11,818,619	100,000	7,898,534	66.80%	7798%	7,445,000
Uganda	45,741,007	40,000	18,502,166	40.40%	46155%	2,471,000
Western Sahara	597,339	n/a	28,000	4.70%	n/a	27,000
Zambia	18,383,955	20,000	9,870,427	53.70%	49252%	2,253,000
Zimbabwe	14,862,924	50,000	8,400,000	56.50%	16700%	994,000
TOTAL AFRICA	1,340,598,447	4,514,400	526,710,313	39.30%	11567%	212,911,701
Rest of World	6,456,017,263	82.80%	4,058,868,405	62.90%	88.50%	2,011,815,020
WORLD TOTAL	**7,796,615,710**	**100.00%**	4,585,578,718	**58.80%**	**100.00%**	**2,224,726,721**

Source: Miniwatts Marketing Group 2020

Africa has a population of about 1.4b, and its share of World internet usage is about 11.5%, as shown in table 2.4.5a above, which makes it the third (3rd) highest internet

user after Asia (50.3%) and Europe (about 16%). When looking at cross-country data on Internet penetration and economic development (World Bank, 2020), we can observe a strong positive correlation between the percentage of Internet users and the population. As demonstrated in fig. 4.2.5b, penetration in Algeria is around 58 per cent, 62.20 per cent in Nigeria, and as high as 87.20 per cent in Kenya. The degree of penetration further demonstrates how the internet has become a critical resource in the manufacturing process.

Aside from the enormous infrastructural deficits such as irregular electricity supply, accessing the internet by poor households in Nigeria is relatively expensive, like financial capital. However, the cost of access is high. For example, Ekenimoh (2018) quotes the Stears Business channel, 2020 reports that, in 2017, an estimated 92 million mobile subscribers spent an average of ₦197 billion on mobile data each month, translating to ₦2,141 per subscriber. The figure might seem inexpensive compared to other goods and services but is equivalent to 12% of the current national minimum wage of ₦18,000 and 7% of the proposed salary of ₦30,000. In addition, the country's poverty headcount ratio is at $2/ day (PPP) % of the population, 82.8% and a Gini coefficient of 43 (World Bank, 2019). Therefore, accessing the internet for most households is very excessive. The cost of access is even worse for poor rural families, some internally displaced by varying forms of crisis and natural disasters. They again look up to Diasporas' remittances to fill in the gaps like financial capital.

6.2.3 Empirical Literature

Although a new concept compared to traditional business resources, the internet has become a vital tool globally for households and businesses. To this end, studies exist that have been used to explain its significance. For example, Madon (2000) while explaining the importance of the internet, states that most households' internet access costs are incredibly high. High price worsens poor rural families, while some are in camps due to displacement resulting from various crises and natural catastrophes. They rely on Diaspora remittances to fill in the gaps, just as they did with financial capital., enhance individuals' freedoms and access to public services through creating platforms for creativity. The empirical literature has also studied the impact of broadband accessibility and speed on development.

Notwithstanding the negative aspects of the internet, such as the activities of hawkers, online attacks on financial data, and proprietary information theft, the internet is here with us. It has completely changed the socioeconomic landscape at the macro and micro levels, and it is not a free good. Ericsson (2013) used survey data of both developing and developed countries established that doubling broadband speed can increase the GDP growth of an economy by 0.3%. Specifically, introducing a 0.5 Mbps broadband connection in BIC countries increases household income by USD 800 per year. Upgrading the broadband connection from 0.5 to 4 Mbps raises household income by USD 46 per month.

We cannot compare the spread of internet access and use among households in developing countries and developed countries. Ipsos performed a customer survey that found MORI and YouGov for Point Topic in 2007. Only about 10million UK households were without any form of the internet but assured that 90% of this number would expect to migrate to broadbands within six months automatically. A developing country like Nigeria has less than 7% of its population connected to the internet during the same period, and only rose to 11.8% in 2011 and 42.2% in 2019. Mare and Mada (2022) has shown that households in the country are seriously deprived of internet usage and requires an urgent address.

Robertson et al. (2007) conducted a segment-based analysis of Internet service adoption among UK households to understand better the key factors influencing residential internet service selection and the "adoption gap" in information technologies between diverse groups of users in the United Kingdom. The findings reveal that socio-demographic characteristics significantly impact internet service adoption, and price elasticity effects differ between various types of families. Households with wealthier and higher educated individuals are less sensitive to the price of Internet services than homes with people from the opposite end of the socio-demographic spectrum. Affluence demonstrates that when most households are poor compared to a small number of wealthy individuals, as is the case in Nigeria, price discrimination favouring the poor will go a long way toward closing the internet access and usage gap. Price discrimination policy is critical for market planners and policymakers who want to understand and quantify the influence of these factors on the digital divide across household types.

Sevigny (2020) investigated the impact of social media on pasture management practices among smallholder cattle farmers in Rondônia, Brazil. The study looked at the effects of risk, credit, and access to information from agricultural extension or neighbours to see if adopting new farming practices can improve farmers' welfare by increasing yield and lowering production costs. According to the study, social media facilitated by the internet connects farmers to a broader range of other farmers, allowing them to acquire more information at a lesser cost than other information technologies.

Information is key to enhancing households' welfare, even in rural areas and having access to the internet makes access to information much easier for families. Nonetheless, the increase in internet use in Brazil was due to the reform and the convergence of the broadband penetration trend with the reform. Digital architecture is required for both enterprises and homes to connect to and use the internet and cost. In Almeida's report, public decisions in assistance of cultural, representative government should redefine digital inclusion. Unifying internet access and expanding the variety of programmes on television; and linking to cultural spaces, considering the theme's scope, which includes issues of an institutional premise, urban guidelines, and social formation.

Chen et al. (2018) examined the relationship between internet access use and external finance of small and micro businesses among Chinese households by developing a theoretical model that explores how internet access influences a company's access to finance. According to the concept, access to the internet can efficiently relieve organisations' funding difficulties by alleviating information asymmetry and lowering agency costs, hence promoting company sustainability. Testing the results using the created model revealed that internet access positively impacts small and micro business funding. (Ovando Chico et al. 2018) assessed the impact of fixed internet adoption on families of the Mexican Telecommunications and Broadcasting Reforms and how homes in ten wealth groups adopted the internet. Results revealed that internet application is distributed unequally, with less than 1% of households in deciles 1 to 6 adopting the internet in 2015, while the wealthiest ten per cent of households have internet access. Unequal distribution is in line with other intrinsic disparities, such as the territorial concentration of income and consumption characterising most developing countries (Velandia-Morales et al. 2021).

When Maskell et al. (2010) looked at broadband internet access, consciousness, and use among US homes, they discovered that 19% of the sample had high-speed connections and the monthly average price correspondingly. High-speed Internet access is preferred by homes with higher earnings and college education, $19.76 and $42.36 respectively, for dial-up and high-speed access. Users with high-speed connections are twice as likely to share music files, images, bank, buy stocks, and pay the bills "many times a week" than dial-up users, with 63 per cent having more than five years of internet experience compared to 48 per cent of dial-up users. According to desire estimations, service reliability, speed, and always-on connectedness are significant Internet access features.

Although the internet and technology use can give many welfare-enhancing ties to households' welfare, studies have discovered that it can also cause social friction and criminality, reducing the same interest it was to improve. For instance, Ng Fat *et al*. (2021) investigated the links between social media use and alcohol consumption in society's youth and young adults to determine if technology use influences how young people drink. The study found that among 10–15-year-olds, those with no profile and non-daily users had a reduced risk of drinking at least monthly than those who used digital platforms for less than an hour, and those with 1–3 hours' use had a higher risk.

The study indicated that people who used alcohol for less than four hours had a decreased chance of binge drinking three or more times per month than those who used alcohol for more than four hours. Also, Boiten and Hernandez-Castro (2014) believe that the internet has become the way people live their lives and thus investigated the impact of the prevalence of cyber-crimes on private households in the UK. Given the importance of the internet to UK households and the unknown cyber-crimes against families, the study developed one of the first customer surveys centred on the impact and prevalence of cybercrime for the average UK citizen.

Empirical linking remittances to households’ ability to access and use the internet in the context of a developing country is scanty. Nevertheless, in Chang and Benson (2022) study, "*Migration and Financial Transactions: Factors Influencing Mobile Remittance Service Usage in the Pandemic*", they examined these problems and discovered that mobile banking services had become essential for the survival of those who received remittances via mobile devices. The study by Elmi and Ngwenyama

(2020) and Mohapatra and Ratha (2011) have similar arguments. The Elmi and Ngwenyama (2020) study drew on social network theory and altruism theory to support their findings that ICTs play a major role in remittances. This report is also in line with Yoshino *et al*. (2018) that looked at how using internet services to send remittances impact on the reduction of the poverty gap ratio in Asia.

6.2.4 Summary of Review and Gap in Literature

The relevant literature review has shown that a family's inability to access and utilize the internet can have an adverse effect on their well-being as well as long-term effects. The inability of households to sufficiently access the internet is mostly due to the expense of access, according to the OECD (2017) and Flamm and Chaudhuri (2007). For instance, Madon (2000) asserts that although internet use is essential for family health, household internet expenses are extremely high while Reddick *et al*. (2020) demonstrates that the aim to high return on investment is in part the cause of many households' inability to access the internet. Poor rural households are therefore made worse in accessing and using the internet by high prices, financial exclusion and other extreme factors as highlighted by, and a lack of well-defined public institutional frameworks Kaliisa *et al*. (2019) such as an inclusive financial market system. This idea is consistent with Huizer (2017) assertion that, despite the internet's intended universality, not everyone has benefited from it.

Internet access is extremely expensive for Nigerian households. For instance, according to Ekenimoh (2018)'s citation of a 2020 research from the Stears Business channel, an estimated 92 million mobile customers spent an average of 197 billion pounds ($2,141) each month on mobile data in 2017. The amount may seem low compared to other goods and services, but it is equal to 7% of the proposed income wage of 30,000 and 12% of the current national minimum wage of 18,000. Additionally, 82.8% of the population, or $2 per day (PPP) which translates to living in abject poverty in the nation, with a Gini coefficient of 43 (World Bank, 2019). As a result, most households access the internet far too infrequently. Poor rural families, some of whom have been internally displaced by various forms of conflict and natural disasters, pay significantly higher access costs. They once more depend on remittances from the Diaspora to make up for capital shortfalls.

Although Chang and Benson (2022) found that mobile banking services had become essential for the survival during the covid-19 pandemic of those who received remittances via mobile devices, the study failed to say whether remittances received through transfer apps were used for internet access by recipients or were used for purposes such as to fund consumption. Although Yoshino *et al*. (2018) found that using internet services to send remittances leads to a reduction in the poverty gap ratio in Asia, the focus was on the macro poverty indicators of headcount ratio; poverty gap ratio; and poverty severity ratio. Thus, a huge gap exist that needs filling when it comes to the micro level and focusing on how funding is accessed for internet use particularly in the context of households in a developing as Nigeria. This analysis fills this gap.

6.3 Data and Methods

This study employs data from the 2015/2016 General Household Survey (GHS) data wave3 for Nigeria conducted by the World Bank in conjunction with the Nigerian Bureau of Statistics (NBS).

6.3.1 Summary Statistics

Presented in table 6.2 below is the summary statistics of the variables used in this part of the analysis.

Table 6. 3 Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Internet access	2,637	0.411452	0.4921902	0	1
Total remittances	2,637	8130.341	111192	0	3500700
profits	2,637	33927.25	126354.2	0	3800000
Income	2,637	12771.29	111530.6	0	4173560
Education expenses	2,637	26613.3	97431.22	0	1730000
Ability to read and write	2,637	3.685248	2.711659	0	25
Higher education	2,637	2.503223	2.571085	0	20
Age of household head	2,637	51.58058	13.61541	16	103
Own mobile phone	2,637	2.130451	1.719645	0	11
Household size	2,637	7.521426	3.55106	1	34
Dummy (female =1)	2,637	0.577865	0.1095093	0	1
Dummy (rural = 1)	2,637	0.61661	0.4863043	0	1

Data Source: World Bank GHS Data for Nigeria 2015/2016

Due to the nature of our interest variable (internetacc.), it is tabulated to reveal better its features since summarizing it alongside other variables does not say much briefly until you derive this using its mean value and the number of observations.

The final number of households that reported to have received remittances in the survey is 2637. The remainder households of 1,333 (3,970 – 2,637) reported to had received no remittances were dropped from the analysis.

Table 6. 4 Nigerian Household Internet Use (yes = 1, No = 0)

internetacc	Freq.	Percent	Cum.
0	1,552	58.85	58.85
1	1,085	41.15	100
Total	**2,637**	**100**	**100**

Table 6.3. shows that out of 2637 households, 1085 households representing about 41%, responded to having access to the internet against 1552 households that do not have access. The summary statistics in table 6.4.1 indicate that about 41% of households responded to having access to the internet and not utilisation. Total remittances have a mean value of 8,130 and a maximum of 3,500,000. The non-zero minimum of this variable is 50 when tabulated. This gives us a range of 3,450,000 (3,500,000 – 50), indicative of extreme values or outliers. The same goes for profits, which means 33,927 but has a maximum of 3,800,000. Further analysis of the other currency variables indicates a similar trend. The number of household members who can read and write ranges from 1 to 25, while the highest number of persons in a household having a higher qualification of at least a Nigerian Certificate in Education (NCE) peaked at 20.

A breakdown of the age of household heads shows that it ranges from 16 to 103 years. When the variable is tabulated, it reveals further that household heads aged 45 have the highest number of occurrences, with only one person being a household head at age 103. The highest number of persons owning a mobile phone or device in a household is 11, the least being 1. Particularly interesting is the size of families which ranges from 1 to 34. Households made up of 7 persons have the modal mark of 369 while homes having 28, 29, 32 and 34 have one each. Female is controlled for about 60% constituting on the male-female divide in this region. The same goes for the rsector, which stands for the rural sector defined in the survey.

6.3.2 Methodology.

The increasing complexity of data in research and business analytics requires versatile, robust, and scalable methods of building explanatory and predictive statistical models (Rodriguez 2017). To this end, following the works of Shcrieder (2000) the impact of the explanatory variables on Internetaccess **(y_1)**, which is a binary response variable, will be examined using the probit model, complemented with the logit model for robustness. One primary reason that influenced the choice of the probit model over other models is that the probit model considers the variability in observation points of the variables. The Maximum Likelihood Estimator (MLE) is the estimation framework applied. Both models can be used in the case of few observations or many observations, unlike the Minimum X^2 Estimator, which can only be effective when there are many observations per cell (Iyoha 2004). The principle of Maximum Likelihood (ML) is to determine which value of β maximizes the probability of observing the given sample (Alexander 2001).

Given a vector of regressors which are assumed to influence the outcome of Internetaccess (Y_2), the general Probit form as below is specified:

$$Pr\ \Pr(Y = 1|X) = \Phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k) \quad \text{..... (6.1)}$$

A normally distributed (Gaussian) random variable with mean 0 and variance 1. Where Pr. denotes probability and Φ is the Cumulative Distribution Function (CDF) of the standard normal distribution. The linear combination of the independent variables, xjb, is commonly called the index function.

The probit model assumes that the error terms are independent and normally distributed.

Symbolically,

$$(X) = 1 - \Phi\left(\frac{Xi\beta}{\sigma}\right)\sigma\ 1 = X_i\beta \text{..... (6.2)}$$

Equation 6.2 indicates that σ is a constant that equals 1, which removes it from the equations, and we can then estimate β (Keele 2006).

To assess the ceteris paribus effects of the discrete changes in the regressors affecting the features of Internetaccess, the marginal effects at point $\hat{x}$ of the individual regressors

in the model must be established. For discrete variables, this will require the marginal effects equation as below:

$$\Delta xki[Y_{¡} = 1|X^{1}i, \ldots, Xki;\ \beta_0, \ldots..\beta k] = \beta k\Phi(\beta_0 \sum_{k=1}^{k} \beta_{1} x_{1i+}\, \beta k +$$

$$\sum_{i=k+1}^{k} \beta_{1} x_{1i+}\, \beta k) - \beta k\Phi(\beta_0 + \sum_{k=1}^{k} \beta_{1} x_{1i+}\, \beta k + \sum_{i=k+1}^{k} \beta_{1} x_{1i+}\, \beta k + \sum_{i=k+1}^{k} \beta_{1} x_{1i} \quad (6.3)$$

As previously defined, Φ is the cumulative distribution function of the standard normal distribution, which says that the outcome variable's probability (internetacc) is a specific function of a linear combination of the regressors, respectively.

Conventionally, $\hat{x} = \underline{x}$ when the variables in $\boldsymbol{x}$ are continuous (Zhang et al. 2014).

Equation (6.3) represents the marginal effects of all other regressors and regression coefficients, which will depend on the values of all regressors.

The results of the logit and the probit model are similar (but not identical). However, while the probit model uses the cumulative distribution function of the standard normal distribution to define f (∗), the logit model uses the cumulative distribution function of the logistic distribution. Both functions will take any number and rescale it to fall between 0 and 1. Hence, whatever, α + βx equals.

6.3.3 Model Specification

The Probit model and Logistic regression are specified as follows:

6.3.3.1 Probit Specification

Estimating the Probit function requires that the unobserved latent variable we are interested in, internet access is a binary response variable (yes = 1 and no = 0) and determines whether a household has access to and utilises the internet. That is the probability of a household accessing and using the internet for various welfare-enhancing activities (internetacc). We specify the following equation.

$$\Pr(internetacc = 1|X) = \phi(\beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \cdots \quad \beta n\mathcal{X}n \qquad .. (6.4)$$

Where the X_1 to Xn is the vector of explanatory variables to determine if the Pr (internetacc = 1|X's). That is:

$$\Pr(internetacc = 1|X) = \phi(\beta_0 + \beta_1 remit + \beta_2 profits + \beta_3 insurance + \beta_4 income + \beta_5 eduexp + \beta_6 readwrite + \beta_7 higheredu + \beta_8 agehhead + \beta_9 ownmobile + \beta_{10} hhsize + \beta_{11} female + \beta_{12} rsector \quad \ldots (6.5)$$

The variables are as previously defined. However, additional explanations are provided below on some of the key variables.

Remit. We have coined Remit from international remittances. International remittances are sent in as cash and gift from abroad by household members who had earlier migrated abroad, and other sources received by households in the migrant-sending country. Many authors have described remittances as a reliable source of alternative/or complementary source finance for families. Remittances are now being sent in data bundles or direct subscriptions to recipients' mobile devices in developing countries, allowing them to engage in welfare-enhancing activities. Sending remittances in the form of internet bundles is a relatively new field that needs researching. As a result, we want to know how such receipts affect a household's ability to use the internet for various purposes.

Profits represent profits made from businesses owned by a household. They include profits realised from personal sales and other income-generating selling sources.

Insurance. Insurance provides extra security and indemnity to households suffering from shocks. The insurance premium is a way of hedging against uncertainty such as unexpected income loss, which could harm a household's welfare.

Income. Income from employment is an essential source of finance for a household to access the internet and engage in other households' welfare-enhancing activities. We seek to establish its impact on internet access and usage by a family.

Eduexp. Education is one household characteristic that enables a household member to acquire the required skill to help them to use the internet for activities. Expenses on education are a good measure of this skill. For migrants who migrate for education purposes, migration serves as a channel of knowledge and skill acquisition which can, in turn, have a developmental effect in the migrant's home country.

Other variables in the model include the ability to read and write, higher education, age of household head, ownership of mobile phones and or other electronic devices that can access and utilise the internet. We have added two dummy variables, female and rsector, to control gender (male or female) and a household's location (whether rural or urban) location). All other variables remain as previously defined in chapter 4 of this thesis.

Let $(X\beta)$ represent the vector of explanatory variables in equation (6.6) such that we have restated it in a more composite form as:

$\Pr(internetacc = 1|X) = \phi(X\beta)$ …….. (6.6)

Equation (6.5 and 6.6) defines the probability of a household having access to and utilising the internet because of the receipt of remittances and other regressors contained in the model.

$Where\ \phi(X\beta)$ is expressed as:

$$\phi(X\beta) = \int_{-¥}^{z} 1/\sqrt{\pi}\exp\left(-\frac{z^2}{2}\right)dz \text{ ……. (6.7)}$$

$X\beta\ in\ equation$ 6.7 ranges between 0 and 1, and it defines the cumulative standard normal distribution function of our model and ϕ is a nonlinear function of Xβ.

To estimate the Z-scores, marginal effects, and the conditional probability of our model, the Maximum Likelihood Estimator (MLE) discussed in chapter 3 is employed.

6.3.3.2. The Logit Model.

We recall equation 6.6.1 as:

$\Pr(internetacc = 1|X) = \phi(\beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \beta n\mathcal{X}n$ and modify equation 6.6 by replacing ϕ with α for compactness as:

$\Pr(internetacc = 1|X) = \alpha(X\beta)$ …… (6.8)

For our logistic model, α(Xβ) concerning our response variable internet access, we redefined the internet access equation as:

$$\Pr\ (internetacc = 1|remit, profits\ etc) = \frac{\exp\ (\beta_0+\beta_1 remit, profits\ldots n.)}{1+\exp\ (\beta_0+\beta_1 remit, profits\ldots n.)} \text{ …… (6.9)}$$

Equation 6.9 is for the estimation. It follows the logistic distribution function that uses the cumulative distribution function specified above, and ***n*** is the number of regressors in the model. Like Probit, to interpret equation (6.5) after estimation, we shall rely on the odds ratios, the log odds, and the marginal effects or conditional probability. All variables remain as previously defined.

6.4. Results and Discussions.

The essence of using the two approaches was to compare which method would produce the best fit. Presented in table 6.7 are the results of the probit and logistic regression coefficients and standard errors. First, the results show that the two approaches produce extremely near-identical output but slight differences. (Spemann, 2009; Jann, 2013).

Table 6. 5 Probit and Logistic Regression Estimates on Internet Access.

	Probit	**Logistic**
Variables	Internet Access	
Int. remittances	0.0234*	0.0376
	(0.0141)	(0.0234)
Profits	0.0337**	0.0613**
	(0.0147)	(0.0263)
Insurance	0.0182**	0.0292**
	(0.0072)	(0.0122)
Income	0.0363***	0.0584***
	(0.0070)	(0.0118)
Education expenses	0.0203***	0.0330***
	(0.0059)	(0.0102)
Read and write	0.0271*	0.0479*
	(0.0159)	(0.0276)
Higher education	-0.0665***	-0.114***
	(0.0161)	(0.0289)
Age of household head	-0.0117***	-0.0196***
	(0.0022)	(0.0037)
Own Mobile Phone	0.402***	0.713***
	(0.0230)	(0.0436)
Household size	-0.00998	-0.022
	(0.0182)	(0.0314)
Female	-0.033	-0.0514
	0.0233	0.04
Rural sector	-0.419***	-0.674***
	0.0603	0.102
Constant	-0.523***	-0.976***
	0.19	0.335
Observations	2,637	2,637
Pseudo R-squared	0.2648	0.2663

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

This time, it should be emphasised that because the dependent variable has binary values of 0 and 1, the coefficients of the results cannot be understood in the same manner as they would be for an OLS, for example (Cameron 2010). Additionally, because the estimated parameters are in the logarithmic scale, the only useful information about the coefficients is their sign. However, what interests me more is how remittances from abroad and the other regressors affect how a household connects to and uses the internet for activities that improve welfare. To establish each regressor's connection to the regressand, the marginal effects of each regressor are estimated. Different probabilities as a result of marginal effects provide more useful information than odds ratios (Perraillon 2019).

From the estimates of the probit model in appendix 6.2, which utilises the Maximum Likelihood Estimation (MLE), the estimated probit model becomes:

internetacc=0.023(remittances)+0.034(profits)+0.018(insurance)+0.036(income)+
0.020(eduexp)–0.065(higheredu)+0.029(readwrite)–0.012(agehhead
+0.401(ownmobile) + 0.026(hhsize)–0.245(female)-0.414(rsector) (6.10).

I can now calculate the marginal effects of the regressors to see how much the conditional probability of the outcome variable changes when the value of a regressor alters keeping other variables constant (at the means). Notwithstanding, the coefficient sign gives the direction of the marginal effect (Jann 2013). The Average Marginal Effect (AME), for both the probit and logit, is calculated to forecast the response variable for a specific change in any regressors. Remittances are positive according to the logit regression estimation, but they are insignificant (0.0376) beneath the 5% and 10% levels of significance.

To get the probability for the probit estimation, I integrated the density function from $\phi(X\beta) = \int_{-¥}^{z} 1/\sqrt{\pi}\exp\left(-\frac{z^2}{2}\right)dz$ as shown in equation (6.6.1.4) and distributes μ standard logistic form, then the model becomes:

$\Pr\,(internetacc = 1|remit, profits\ etc) = \frac{\exp\,(\beta_0+\beta_1 remit, profits\ldots n.)}{1+\exp\,(\beta_0+\beta_1 remit, profits\ldots n.)}$ as in (6.11)

as I have previously described.

Table 6. 6 Average Marginal Effects of Regressors (Probit)

	Delta-method					
	dy/dx	**Std. Err.**	**z**	**P>z**	**[95% Conf. interval**	
Int. remittances	0.006597	0.003961	1.67	0.096	-0.0012	0.01436
Profits	0.009403	0.004129	2.28	0.023	0.00131	0.0174962
Insurance	0.005057	0.002011	2.52	0.012	0.00112	0.0089981
Income	0.010173	0.001933	5.26	0.000	0.00638	0.0139622
Eduexp	0.005686	0.00166	3.42	0.001	0.00243	0.0089402
Higheredu	-0.018559	0.004497	-4.13	0.000	-0.0274	-0.009746
Readwrite	0.008242	0.004448	1.85	0.064	-0.0005	0.0169592
Age HH head	-0.003252	0.000598	-5.44	0.000	-0.0044	-0.002081
Own mobile phone	0.113167	0.005455	20.74	0.000	0.10248	0.1238596
Household size	-0.007409	0.003648	-2.03	0.042	-0.0146	-0.000259
Female	-0.070584	0.068977	-1.02	0.306	-0.2058	0.064608
Rural sector	-0.122773	0.018353	-6.69	0.000	-0.1587	-0.086802

Note: dy/dx for factor levels is the discrete change from the base level.

Table 6. 7 Average Marginal Effects of Regressors (Logit)

	dy/dx	Std. Err.	z	P>z	[95% Conf.	Interval]
Int. remittances	0.00622	0.00385	1.62	0.106	-0.001319	0.0137592
Profits	0.009882	0.00431	2.29	0.022	0.00143	0.018334
Insurance	0.004734	0.002	2.36	0.018	0.0008052	0.0086632
Income	0.009589	0.00191	5.01	0.000	0.005841	0.013336
Eduexp	0.005437	0.00166	3.27	0.001	0.0021824	0.0086923
Higheredu	-0.018695	0.00471	-3.97	0.000	-0.027925	-0.009466
Readwrite	0.008432	0.0045	1.87	0.061	-0.00039	0.0172548
Age HH head	-0.003181	0.0006	-5.32	0.000	-0.004353	-0.002008
Own mobile phone	0.117562	0.00582	20.2	0.000	0.1061528	0.128972
Household size	-0.007635	0.00374	-2.04	0.041	-0.014974	-0.000295
Female	-0.077571	0.06802	-1.14	0.254	-0.210885	0.0557435
Rural sector	-0.115358	0.01812	-6.36	0	-0.150882	-0.079834

Note: dy/dx for factor levels is the discrete change from the base level.

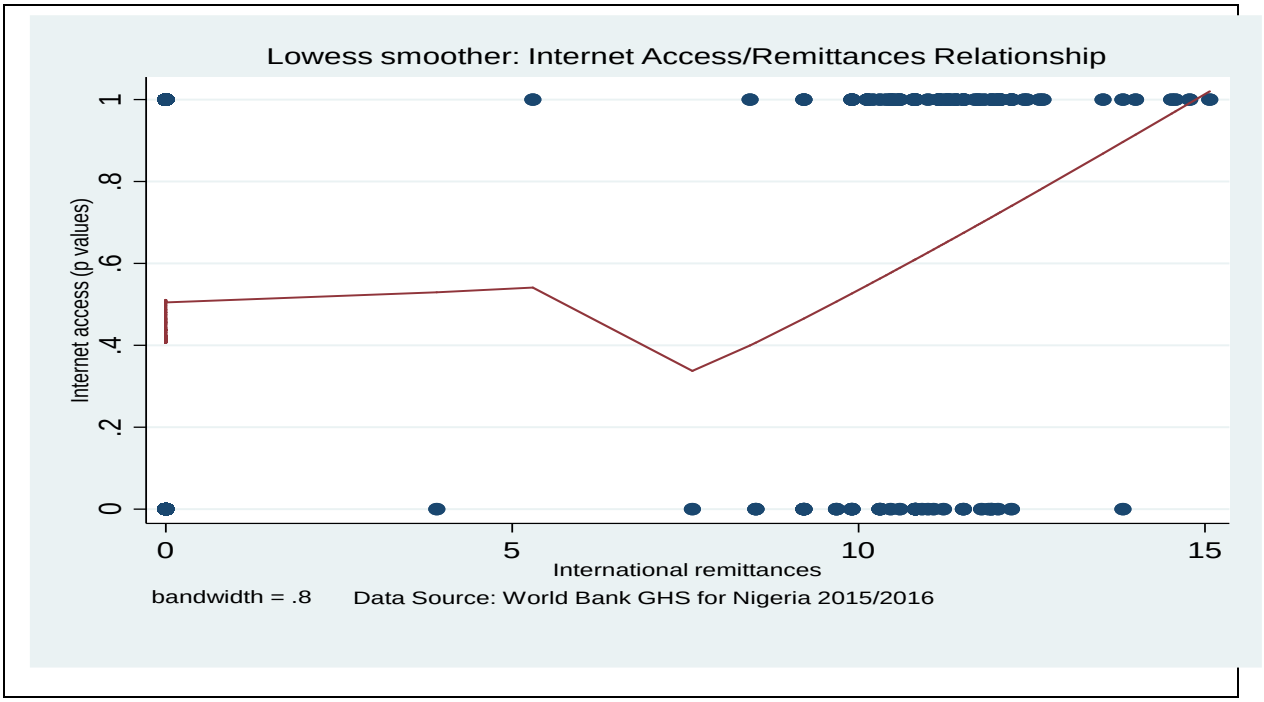
The probit and logistic regressions results are nearly the same, thus confirming what is found in the literature that both methods are similar, as can be seen from the tables. Therefore, discussion of the results is focused more on the probit estimates since this is the primary method of analysing the model. The null hypothesis in this analysis is that: International remittances do not significantly contribute to households' accessing and utilising the internet.

The null hypothesis is rejected because the results indicate that remittances are significant in explaining the internet utilisation by households under the probit estimation. However, we are only about 90% confident in this relationship. In addition, the magnitude (0.0230) at which this positive relationship occurs calls for some reflections. Under the logistic model, however, international remittances return insignificant though optimistic. At the marginal level, international remittances can only make an insubstantial (p = 0.0066) contribution to a household's internet access and utilisation if the family receives additional remittances, as shown in table 6.7.2a and figure 6.1. In figure 6.1, it is evident that the relationship curves between internet access and remittances are positive and

upward sloping; it was almost horizontal before negatively sloping downwards and then, a sharp rise.

The results also indicate that ownership of a mobile phone in this part of the World is critical for households to access and use the internet. A marginal value of 0.113 indicates that an additional mobile phone or electronic device, or an improvement to an existing one, increases access probability by more than 11%. The likelihood is significant because, due to poverty and a lack of funds, many households cannot obtain mobile devices that allow them to access the internet and participate in internet-enabled economic and social activities. Income from employment probability is 0.0101, indicating that increased household earnings would increase their access and utilisation of the internet.

Fig. 6. 2 Internet Access-Remittances Relationship



Source: Author's Computation

The likelihood of accessing and using the internet by a household decrease by about 0.007 if the household size increases by one more person. In addition, homes in rural areas are at a disadvantage for several reasons.

Higher education, which should attract a fundamental level of internet usage, yielded a negative coefficient against expectations but with a minor impact. In contrast, reading

and writing competence has a positive marginal influence on the response. The finding could imply that to use the internet, all required is the ability to read and write, rather than a university undergraduate or postgraduate degree or equivalent.

By interacting with the two variables: female and rsector, it is intended to see if a female who lives in a rural section of the country has a higher ability to access and use the internet than her male counterparts. Table 6.7.3 is an extract of the interaction. The findings, being a female living in a rural area of the country limits your ability to access and use resources by as much as 20% compared to your urban counterparts. The result was expected, given that most of the country's rural areas lack basic infrastructures such as power and excellent roads. The rural population's low literacy rate and the gender gap aggravate the lack of basic amenities. The gap means that, while the likelihood of using the internet in urban areas is not significant for females, it is still positive. Therefore, the urban woman is more likely to access and use the internet if remittance receipts are high enough than the rural woman.

The coefficient of the age of a family head is, as expected, negatively related to internet access. This refers to older people being more resistant to using technology. As demonstrated in the literature, younger household heads are more likely to engage in technology use and internet activities.

Table 6. 8 Interaction Effects

Probit	No. of obs. = 2,637 LR chi2(3) = 225.36 Prob > chi2 = 0.0000 Pseudo R2 = 0.0631 Log likelihood = -1673.5798				
internetacc Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Intotalrem .0406634	0.0122138	3.33	0.001	0.01672	0.0646
rsector#female					
0 1 .199511	0.2253278	0.59	0.376	-0.2421	0.64115
1 1 -.5336675	0.2239958	-2.38	0.017	-0.9727	-0.0946
_cons 4.87e-14	0.2215567	0	1	-0.4342	0.43424

Source: Author’s Computation

As shown in Table 6.7, rsector and female interaction term indicates that remittances are significant in enabling households to access and utilise the internet. However, being a female and residing in the rural part of the country shows that the receipt of remittances would be insignificant and negatively affect the household and make worse-off by as much as 22.4% compared to if the recipient were a male.

6.5. Conclusion

To ascertain the effect of foreign remittances on a household's ability to access and use the internet for various economic and social activities intended to improve their wellbeing, I regressed the explanatory factors which include international remittances, profits, insurance, work income, and other household earning potentials including location. A dummy for sex and another dummy for the rural sector is interacted to see how they affect internet access of households in the rural areas.

With an underlying null hypothesis that international remittances do not make a significant contribution to households' access and utilisation of the internet, findings from the analysis include that:

a. That there is a positive relationship between overseas remittances and a remittance-receiving household's ability to access and use the internet. However, compared to the other regressors in the model, such receipt has a negligible impact on a household's capacity to do so.

b. The main determinant of a household's capacity to access and use the internet is whether it owns a mobile or electronic device. Ownership of a mobile device comes as no surprise given that computers and mobile devices are necessary for internet access. This result is consistent with Munyegera and Matsumoto (2016) findings in the case of rural Uganda, which showed that mobile phones allow users to access financial products and conduct financial transactions. The results of this analysis concur with (Ouma *et al*. 2017) which found that access to mobile financial services not only increases the possibility of saving but also significantly affects the amounts saved, possibly because of how frequently and easily such transactions may be completed using a mobile phone.

c. A female recipient living in a rural location is unlikely to benefit from receiving remittances, according to this study that controls for and interacts the variables gender and sector to determine gender-based effects of using the internet powered by remittances. Instead, compared to a male recipient, the recipient would have over 22% less luck using the internet. The prior study (Reddick *et al.* 2020) that looked at the digital gap in San Antonio, the seventh-largest city in terms of population in the United States with more than half of the population being Hispanic, relates with this one in terms of how rural families are disadvantaged by the findings. Geographical

differences, profit-based discrimination, the cost of technology deployment, and socioeconomic characteristics were identified to be four of the reasons that contributed to the digital gap between urban and rural families.

d. The study also finds the ability to read and write (a measure of literacy) has a positive likelihood on a household's ability to access and use the internet. However, against expectations, acquiring higher education such as a university degree negatively impacts internet access. The age of a household head and the size of a household displayed similar results. Size, for example, tends to increase the financial burden of a family, thus negatively impacting the ability of that household to use the internet. Again, the specific results of the households related variables in the specification agree with previous empirical outcomes such as the studies by Delgado and Miles (1997), Chowdhury (2015) Castree (2016), and Chen *et al*. (2018) on the importance of the characteristics of household on their earning potentials

According to the findings in this chapter, overseas remittances have a significant impact on households' ability to access and use the internet in Nigeria. However, compared to other finance options available to a family, the amount of influence is negligible. The ineligibility of the significance of remittances could be due to them for other purposes, such as remittances being diverted to immediate consumption. Another argument could be that the number of receipts is insufficient to significantly impact internet access, especially when combined with other factors such as the recipient's inability to use the internet for commercial goals rather than social ones owing to illiteracy.

Most households, however, lack the resources and are unable to acquire gadgets that allow them to access the internet due to cost or financial constraints (OECD 2017). This incapacity alone is a significant barrier to many households adopting the internet. Being a female in a remote place makes it more difficult for a family to access and use the internet, as the results have shown that females have less access than their male counterparts. It is believed that females not having equal access is partly attributable to the male-female divide in this region and a lack of deep digital internet infrastructure in rural areas (Gottinger 2017).

Poverty in most rural homes and acts of vandalism and terrorism targeted primarily at rural areas exacerbate the lack of deep internet penetration. Rural females are put

under additional strain by illiteracy and the random birth of children by homes, limiting their access to the internet (Irikefe 2021).

6.6 Policy Implication and the Need for Further Research

The importance of internet access for households in the present age cannot be overestimated. It is needed in virtually every aspect of life of households. The absence of which could cause great welfare loss for families. Findings from this study have shown that in a developing country as Nigeria, this all-important welfare enhancing platform is largely inaccessible by most families due to a lack of adequate local finance hence, the reliance on international remittances by families. While this study has made suggestions in terms of policy, much is still desired regarding further research on how to combat the problems of digital infrastructural deficits in the country. Secondly, it is essential to educate remittances-receiving households on how to manage receipts (e.g., internet packets, mobile top-ups) towards welfare-enhancing internet activities rather than on final internet consumption activities such as viewing home movies.

Most importantly, the government should address the country's cable infrastructure gap, focusing on rural areas and effectively combat vandals and rebels who have wrecked most of the country's infrastructure. Illiteracy has always been a hindrance to low-income families' advancement. Most rural residents, particularly women, are uneducated. Rural women's education programmes should be established and housed at the local council level, with complete accountability once the programme's goal is apparent. Placing it at the council level can reach a more significant number of people and households. They would understand the importance of the internet and want to be a part of it. Rural residents would be better able to manage overseas remittances and other resources for their benefit if they gained information from such a programme.

CHAPTER 7. CONCLUSION RECOMMENDATIONS AND FUTURE WORK

7.1 Introduction

The opportunity for analysing the research problem was established based on the challenges of lack of financial capital for non-farm businesses, coping with consumption after experiencing negative shocks, and households' inability to sufficiently access the internet identified in chapter one. This was made clearer by the examination of relevant literature in chapter two and the discussion of methodological difficulties in chapter three. The analysis chapters 4, 5, and 6 discussed more literature specific to their objectives and addressed the various challenges faced by Nigerian households in accessing finance for welfare-enhancing activities within the domestic financial system, as well as their reliance on international remittances as a result. The primary goal of the study was to analyse their reliance on remittances in three areas of their welfare efforts. on other words, the role of remittances on three aspects of household wellbeing is being explored.

The relationship between household financial capital and overseas remittances was explored using a quantile approach. Second, to compare the effects of remittances to other sources of coping strategies on household spending in the aftermath of shocks, a linearized regression technique, versus the parametric analysis of mean regression was used. As a result, households were classified based on the severity of the shocks they experienced. Third, I evaluated the effect of overseas remittances in households accessing and using the internet for various household activities due to their difficulty to get sufficient money locally using the Probit enhanced by the Logit model.

7.2 How the Research Questions were Explored

In chapter two, a critical literature search was done to better understand what is available and what is not on the subject to investigate the research questions derived from the objectives. Major strands of theories pertinent to the inquiry and empirical works were evaluated, critically examining past approaches for analysing remittance receipts by households and their welfare. The drawbacks of existing studies were highlighted and then, three different models to investigate each research objective were discussed in chapter three.

Two log-log quantile regression models with two interactions were used to study the influence of remittances on the financial capital of household-owned companies. To investigate the impacts of remittances on post-shock consumption coping in

households, I developed a non-linear model after establishing a disparity in household means. I designed and estimated a Probit regression model augmented by the Logit model to investigate the effects of remittances on households connecting to and utilising the internet. Relevant results were discussed in the various analytical chapters. However, provided below in 7.3 is a summary of the findings.

7.3 Summary of Major Findings

The analysis of the effects of remittances on the three critical aspects of the welfare of households revealed the following:

a. In terms of providing capital finance for non-farm income generating activities (businesses) owned by households, it is discovered that international remittances are effective only when the capital need of a business is small but becomes ineffective when the capital requirement of a business is larger than the median value. These findings agree with previous empirical results such as Davino et al. (2014) and Lin and Benjamin (2017) that discovered that quantile regression enables the detection of more robust results in analysis than conventional procedures would because the method does not focus on the conditional mean.

The level of significance of remittances can be interpreted to mean that not in all cases can international remittances provide the capital need of a household interested in setting up a non-farm business or operating one. Domestic sources of finance such as profits and the ability to engage in labour-intensive activities are found to be more effective in providing capital to households than foreign remittances. The findings regarding domestic sources of income as a source of finance and its effect on household poverty are consistent with Olowa *et al.* (2013) study, which finds that while both foreign and domestic remittances make a positive contribution to improving the welfare of households, particularly in rural areas, domestic remittances make a more significant contribution to household welfare.

Controlling for heterogeneity in geography and zones, it was also found that the receipt of remittances varies across the geopolitical region; families in the southern part of the country receive more international remittances than northern households in the north part. The ongoing attacks on rural communities, among other factors such as lack of skills, have made them worse off in sourcing capital. It can therefore be concluded that reliance on international remittances by families for business finance may fail in the

absence of a solid and effective domestic support system such as a crisis-free environment (e.g., tackling insurgency in the northeast and communal-herders clashes in the northcentral zone).

b. In the investigation of the effect of remittances on the post-shock consumption of households by category, it is found that international remittances are an effective means of coping with household consumption after they experience shocks in Nigeria but not as effective as local coping sources such as profits. However, in terms of the class of households investigated, when remittances are used as a coping strategy, the group of households that suffered the less-severe shock-types benefit more compared to the group that experienced more catastrophic shocks. This new strand of evidence is in line with Alem and Andersson (2019) study which demonstrates that obtaining international remittances raises the value of private domestic interhousehold transfers.

   The relative low effectiveness of remittances as a coping measure compared to profits could be the result of several factors. These factors could include the amount and the regularity of remittances received by households, migrant workers who usually transmit remittances being unable to send remittances owing to unforeseen events at destination, among other things. This ties once more to the finding of Le De *et al.* (2013) that remittances can be both a strength that helps people deal with shocks and recover from them, and a weakness formed within the context of vulnerability. While profits have returned from the analysis as the most significant measure in a households' post-shock consumption, to make profit from a business, however, requires access to affordable finance which is extremely difficult for poor households to obtain. The findings point to the failure of existing the financial system to make financing accessible to willing households and the inability of the government to create a violent-free environment that enables a business to thrive as grave hindrances in this regard.

   However, the impact of remittances on the post-shock consumption coping of households depends on the severity of shocks suffered by a family. The more severe the surprise is, the less effective are remittances as a coping strategy. Domestic remittances are more significant for all households and households that experienced lesser shocks than international remittances. However, they become insignificant

when the shock is very severe (such as kidnapping). The trend suggests that local remittances are insufficient to serve as a post-shock consumption gauge.

Profits are significant as a post-shock coping strategy for all and the categories of households. The influence of earnings on consumption strikes importance. Suppose there was enough finance to stimulate household trade and the effects of shocks on consumption; households could handle the impacts of shocks by themselves without having to rely on remittances. In that case, households could cope by using profits generated from trade without relying on remittances. This strand of the findings are also in line with those of Azam and Gubert (2006) whose empirical studies of the Senegal River valley in Mali and Senegal led them to the conclusion that remittances are largely a contingent flow intended to support the family's consumption in the event of unfavourable shocks. Azam and Gubert (2006) contend further that there is some moral hazard in the insurance system provided by remittances since individuals who stay behind choose to take less care of themselves because they are confident that any consumption gap would be made up for by the migrants. These findings all point towards the school of thought which posits that reliance on remittances can make recipient lazy. See also the studies by Murakami et al. (2021) and Amponsah and Garcia-Fuentes (2016).

When people suffer profound shocks, using income from employment as a post-shock coping mechanism has returned insignificant. The insignificance of employment income could be due to shocks where families lose their source of earnings. For example, sometimes children get abducted by criminals, or their parents displaced because their dwelling place is damaged. When this happens, parents lose their sources of income, and their children and wards withdrawn from schools. The insignificance of income could be due to the loss of employment income because people indirectly lose their jobs. These could be why employment income returned insignificant on post-shock consumption smoothening of households that experienced the most severe shocks.

Households that live in the crisis-prone geopolitical zones of the country, such as parts of the north-central, are faced with more challenges dealing with consumption after suffering shocks than their urban counterparts. The results indicate that as a female and living in a rural area of the country makes a household worse off in coping with

shocks. The results mean that using remittances to manage consumption smoothening put female led rural families at a disadvantage.

c. For households' internet access, it is discovered that there is a positive relationship between overseas remittances and a remittance-receiving household's ability to access and use the internet, given the underlying null hypothesis that international remittances do not make a significant contribution to households' access and utilisation of the internet. Ownership of a mobile phone is the most significant in explaining changes in the behaviour of internet usage by households. This comes as no surprise given that computers and mobile devices are necessary for internet access. This result is consistent with Munyegera and Matsumoto (2016) findings in the case of rural Uganda, which showed that mobile phones allow users to access financial products and conduct financial transactions. The results of this analysis concur with (Ouma *et al.* 2017) which found that access to mobile financial services not only increases the possibility of saving but also significantly affects the amounts saved, possibly because of how frequently and easily such transactions may be completed using a mobile phone.

   The internet access and usage investigation also reveal that female recipients of remittances living in the rural location are unlikely to benefit from receiving remittances as much as their male counterparts. This revelation came to the bare when the study controlled for and interacted the gender and sector to variables to determine gender-based effects of using the internet powered by remittances. Instead, compared to a male recipient, the recipient would have over 22% less luck using the internet. The prior study (Reddick *et al*. 2020) that looked at the digital gap in San Antonio, the seventh-largest city in terms of population in the United States with more than half of the population being Hispanic, relates with this one in terms of how rural families are disadvantaged by the findings. Geographical differences, profit-based discrimination, the cost of technology deployment, and socioeconomic characteristics were identified to be four of the reasons that contributed to the digital gap between urban and rural families.

   It is also discovered that a household's capacity to read and write (a measure of literacy) has a positive possibility of accessing and using the internet. However, contrary to popular belief, obtaining higher education, such as a university degree, has

a detrimental impact on internet access. The age of the household head and the size of the household produced comparable findings. Size, for example, tends to increase a family's financial burden, negatively impacting that household's capacity to use the internet. Again, the results of the households-related variables in the specification correspond with earlier empirical findings, such as research on the importance of the features of households by Delgado and Miles (1997), Chowdhury (2015), Castree (2016), and Chen *et al*. (2018).

In conclusion, it is confirmed in this component of the analysis that foreign remittances have a major impact on households' ability to access and use the internet in Nigeria. However, the amount of impact is modest when compared to other financial possibilities accessible to a family. The ineligibility of remittances for significance could be owing to them being diverted to other reasons, such as immediate consumption. Another opinion is that the quantity of receipts is insufficient to have a substantial impact on internet access, particularly when combined with other variables such as the recipient's incapacity to utilise the internet for commercial rather than social purposes due to illiteracy.

Most households, however, lack the means and are unable to obtain internet-accessible devices due to cost or financial constraints (OECD 2017). This limitation is a big impediment to many homes embracing the internet. Being a female in a distant location makes it more difficult for a family to access and use the internet, as studies show that females have less access than males. Females' lack of access is said to be due in part to the region's male-female gap and a lack of deep digital internet infrastructure in rural areas (Gottinger 2017). Poverty in most rural homes, as well as acts of vandalism and terrorism directed especially at rural areas, worsen the absence of widespread internet access. Illiteracy and the random delivery of children by families place additional hardship on rural ladies, limiting their access to the internet (Irikefe 2021).

7.4 Contribution to Knowledge

Whilst the debate on the actual connection of remittances and the welfare of households in developing countries, this study contributes to the on the literature on the subject in the following measure.

a. In determining how remittances impact the financial capital of non-farm income generating activities, this is the first-time a study determining the threshold at which international remittances can effectively provide capital funding for a non-farm income business of a household. The study demonstrates that international remittances as a source of capital finance are only effective when the financial capital need is small and not above the median level. The analysis establishes that once the capital requirement of a household business is large, remittances become ineffective as a source of capital funding. Secondly, the investigation shows that using a parametric test such as Ordinary Least Square (OLS) to investigate the link between remittances and the financial capital of households-owned businesses could produce misleading or spurious results which align with previous studies such as Bergherr (2018), Chen and Chalhoub-Deville (2014), and Arellano and Bonhomme (2017) because parametric analyses would fail to account for the heterogeneity of family businesses.
b. In terms of how remittances affect the post-shock consumption smoothening of households, this thesis contributed to the stock of knowledge by establishing that international remittances have different effects on consumption when households are categorised in term of the shock events they suffered. For households that experienced more devasting shocks, the impact is less effective compared to households that experienced less-devasting shock types. The study equally demonstrates that remittances as a source of coping with consumption may become ineffective if the shock event is very severe unless augmented with local sources. However, for mild shock occurrences, remittances act as good shock absorbers. In addition, compared to international remittances, internal or domestic sources of finance such as profits and support from relatives and friends are more effective as a coping strategy.
c. Regarding internet access, it is established through this study that remittances make a significant contribution to families accessing and using the internet. However, when compared to other finance options available to a family, the amount of influence is negligible. This implies that compared to other sources of finance, such remittance receipt has little impact on a household's capacity to do so. The study also establishes that the main determinant of a household's capacity to access and use the internet is whether it owns a mobile or an electronic device. Ownership of a mobile device comes as no surprise given that computers and mobile devices are necessary for internet access.

Overall, lack of finance is a significant obstacle to households' welfare in Nigeria.

7.5 Limitations of the Study

A major limitation of this study was sourcing the right data to execute the study's research questions. The original intention was to develop survey instrument for the collection of first-hand information from recipient of remittances across all zones in the country. This was not possible due to the huge budgetary limiting factor. Even the consideration of an online survey data collection instrument would not suffice due communication barriers and social and political shocks (e.g., session agitations, farmers/herders' conflicts) that were apparent across the country at the time of this study. Hence, the reliance on the longitudinal household-level data for Nigeria housed by the World Bank.

After cleaning the data sourced from the World in line with the study's objectives, the resultant data points available for the analyses was less than desired.

7.6 Policy Implication and the Need for Future Research

The policy need in respect of the three strand of analysis of this study revolve around how to make finance available to households for various reasons. Peachey and Roe (2004), assert that, for a variety of factors, including unemployment and illiteracy, a sizable fraction of households in most developing nations are not eligible for credit through the domestic banking system. Thus, the findings have some policy ramifications.

Concerning households' ability to access capital finance for their non-farm businesses, the study demonstrates that local sources of finance are more reliable and effective in providing finance to the businesses owned by households than remittances from abroad. This analysis demonstrates that local financial resources are superior to overseas remittances in terms of their ability to finance household-owned companies. Their irregular nature (depending on when migrants or senders can remit from their foreign destinations) may account for their lower importance relative to domestic sources of capital finance. A good explanation for why people will spend money at a level consistent with their expected long-term average income provided by Friedman (1957)'s permanent income hypothesis. It also explains why remittances may not be considered permanent income because their frequency of receipt is irregular and depends on the social and financial standing of the sending immigrant.

The findings also demonstrate that, dependence on international remittances as a source of finance by households may fail to provide capital finance in the absence of a solid and effective domestic support system for families in need of finance for their non-farm income generating activities (business). For there to be an effective capital support system, capital finance drivers such as an easily accessible financial market and an enabling operating environment are required. This means that the domestic drivers of finance and economic environment are a panacea for remittances to work. Anyanwu *et al*. (2016) found that factors like remittances, local investment rate, public spending, openness to trade, investment from abroad, among other factors seem to aggravate income dis-equalization when they studied income inequality in the West African region which could be due to income inequality and excessively high cost of capital finance. Extensive income distribution gap which would have an adverse multiplier effect on the savings/investment relationship by most of the population.

To avoid the shortcomings of earlier schemes, such as high obstacles in accessing the market, which needy people were unable to access uniformly, more research is needed on how to steer remittances towards providing long-term finance for businesses. More research is advised for a second reason: because officials diverted cash from earlier government projects, households found it extremely difficult to access those programmes and were forced to look for alternative forms of financing. More studies are also needed to block Identified loopholes in earlier projects.

In terms of coping with because of negative shocks, the results have also shown that using profits made from business for consumption smoothening strategy post-shock is more effective for households than international remittances. However, to make profits entails having the resources to engage in a business in the first place. Apart from smoothening consumption, it shows that if families that have suffered shocks have access to finance for trading, they are most likely to mitigate the effect of shocks by using profits generated for consumption purposes. Access to finance has been a critical limiting factor for households. To adequately engage in various welfare-enhancing activities, access to funds must be affordable by households. Bottlenecks that characterise Nigeria's current financial market, pointing to the financial system's failure to make financing accessible to needy households. With insurgents' continued attacks on homes, the government must increase its efforts in addressing the problems to avoid eroding the trickle of the benefits of remittances to families receive.

In this wise, it is recommend that a revised social welfare programme with in-built controls mechanism and complementary policy as suggested by (Brown 2006) be set up as remittance appear to fund only current needs of households (Kakhkharov et al. 2021).

The results also indicate that having a mobile device improves the likelihood of using the internet. However, many households lack the resources to acquire the gadgets that are gateways to accessing and using the internet due to the cost of devices and financial constraints. This incapacity alone is a significant barrier to many households adopting the internet. The government should enter an agreement with a mobile producer to mass-produce mobile phones affordable to poor households but of good quality to enable families to access devices they could use to access and use the internet.

A rural women's education programme should be established and housed at the local council level, with complete accountability. Once the programme's goal is clear enough, placing it at the council level can get to a more significant number of people and include more people. Rural residents would be better able to manage overseas remittances and other resources for their benefit if they gained information from such a programme. They would understand the importance of the internet and want to be a part of it. It is believed that gender gap is partly attributable to the male-female divide in this region and a lack of deep digital internet infrastructure in rural areas. Being a female in a remote place makes it more difficult for a household to access and use the internet, as the results have shown that females have less access than their male counterparts. Poverty in most rustic homes and acts of vandalism and terrorism targeted mostly at rural areas exacerbate the lack of deep internet penetration. Rural females are put under additional strain by illiteracy and the random birth of children by homes, limiting their access to the internet.

Accordingly, it is proposed that developing a discriminating finance market that divides households into groups of shock-affected and non-shock-affected households and favours the shock-affected would assist alleviate the challenges faced by households in managing post-shock expenditure. A market like this would make it possible for households that have experienced shocks to obtain financing essentially for free, which they might use to fund profitable pursuits. Additionally, it is suggested

to launch a campaign to promote saving, so that households realise the importance of setting aside some of the remittances they receive when there is little to no shock so they may utilise those monies to support consumption and non-farm companies when a crisis strikes. In turn, if a sizable amount of the remittance is set away for savings, it can eventually contribute to significant economic growth, as indicated in Salahuddin *et al*. (2021) analysis of Bangladesh. Profits from these enterprises' sales can boost a family's ability to weather financial difficulty.

On internet access and use, a lack of finance for accessing and using the internet has prevented many households from enjoying internet-enabled welfare-enhancing activities in Nigeria. The results of this study have demonstrated that in a developing nation like Nigeria, this crucial platform for boosting welfare is generally inaccessible by most families due to a lack of appropriate local financing; as a result, families are dependent on overseas remittances. Even though this study offered policy recommendations, much more research is still needed to address the nation's concerns with digital infrastructure shortages. Second, it's critical to inform households that receive remittances on how to allocate receipts (such as internet packets and cell top-ups) towards welfare-improving internet activities as opposed to ultimate internet consumption activities like watching home videos. The findings are consistent with various reports, which finds, among other things, that for low-income households to access fast internet connectivity, significant price reductions for basic broadband subscriptions are required. That price discrimination among Internet Service Providers (ISPs) could help achieve this. The focus of policy should be on closing the access gap by subsidising mobile devices, broadband costs, and data bundles for low-income households. Furthermore, the government might develop cooperation with ISPs as social security targets for most impoverished families and women, with clear entry criteria and tight safeguards to prevent diversions.

Most people who live in rural areas lack education, especially women. Once the purpose of a rural women's education initiative is clear, it should be developed and housed at the local government level, with full accountability. At the council level, it can reach a larger population of individuals and homes. They would be aware of the value of the internet and desire to participate in it. If they received information from such a programme, rural residents would be better able to manage foreign remittances and other resources for their benefits.

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APPENDIX

		Bootstrap				
Infcapital	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
q25						
Intotalrem	0.0432	0.0242	1.7800	0.075	-0.0044	0.0908
Inprofits	0.3397	0.0483	7.0300	0.000	0.2449	0.4345
Ineduexp	0.0051	0.0113	0.4500	0.651	-0.0171	0.0274
InregularY	-0.0347	0.0198	-1.7500	0.081	-0.0737	0.0042
weeklyincome	1.17E-0	9.48E-0	0.1200	0.902	-1.74E-0	1.98E-0
Ininput	0.0798	0.0096	8.2900	0.000	0.0609	0.0986
internetacc	0.1721	0.0343	5.0100	0.000	0.1048	0.2394
agehhead	-0.0128	0.0036	-3.5100	0.000	-0.0199	-0.0056
labhrs	0.0079	0.0011	7.0000	0.000	0.0057	0.0102
readwrite	0.0298	0.01062	2.8100	0.005	0.0090	0.0507
higheredu	-0.0861	0.0223	-3.8500	0.000	-0.1300	-0.0422
hhsize	0.0075	0.0204	0.3700	0.715	-0.0326	0.0476
1.regIGA	0.9464	0.1445	6.5500	0.000	0.6630	1.2298
1.rsector	-0.1538	0.0928	-1.6600	0.098	-0.3360	0.0282
_cons	5.8559	0.5260	11.1300	0.000	4.8245	6.8874
q50						
Intotalrem	0.0189	0.0130	1.4500	0.147	-0.0066	0.0445
Inprofits	0.3257	0.0383	8.5000	0.000	0.2505	0.4008
Ineduexp	0.0084	0.0073	1.1500	0.25	-0.0059	0.0228
InregularY	-0.0089	0.0174	-0.5100	0.609	-0.0431	0.0253
weeklyincome	-2.16E-0	7.01E-0	-0.0300	0.975	-1.40E-0	1.35E-0
Ininput	0.0595	0.0088	6.7600	0.000	0.0422	0.0768
internetacc	0.1477	0.0195	7.5400	0.000	0.1092	0.1861
agehhead	-0.0117	0.0030	-3.8300	0.000	-0.0177	-0.0057
labhrs	0.0062	0.0010	5.9900	0.000	0.0041	0.0082
readwrite	0.0770	0.0193	3.9900	0.000	0.0391	0.1148
higheredu	-0.0562	0.0179	-3.1400	0.002	-0.0912	-0.02107
hhsize	-0.0248	0.0189	-1.3100	0.190	-0.0620	0.01232
1.regIGA	1.0479	0.1356	7.7200	0.000	0.7818	1.3139
1.rsector	-0.2157	0.1000	-2.1600	0.031	-0.4119	-0.0194
_cons	7.1836	0.3928	18.29	0.000	6.4134	7.9539
q75						
Intotalrem	0.0096	0.0124	0.7700	0.439	-0.0147	0.0339
Inprofits	0.2447	0.0248	9.8600	0.000	0.1960	0.2933
Ineduexp	0.0158	0.0078	2.0200	0.044	0.0004	0.0311
InregularY	0.0126	0.0176	0.7200	0.474	-0.02192	0.04715
weeklyincome	-2.17E-0	1.01E-0	-0.2200	0.830	-2.19E-0	1.76E-0
Ininput	0.0381	0.0103	3.6800	0.000	0.0178	0.0585
internetacc	0.1746	0.0480	3.6300	0.000	0.0803	0.2689
agehhead	-0.0114	0.0034	-3.3100	0.001	-0.0181	-0.0046
labhrs	0.0052	0.0009	5.6300	0.000	0.0033	0.0069
readwrite	0.0576	0.0211	2.7300	0.006	0.0161	0.0990
higheredu	-0.0075	0.0211	-0.3600	0.720	-0.0491	0.0339
hhsize	-0.0257	0.0166	-1.5400	0.123	-0.0584	0.0069
1.regIGA	1.3328	0.1988	6.7000	0.000	0.9429	1.7226
1.rsector	-0.2223	0.0824	-2.7000	0.007	-0.3840	-0.0606
_cons	9.0513	0.3167	28.5800	0.000	8.4302	9.6723
q95						
Intotalrem	-0.0021	0.0145	-0.1500	0.881	-0.0307	0.0263
Inprofits	0.1723	0.0252	6.8200	0.000	0.1228	0.2219
Ineduexp	0.0014	0.0107	0.1400	0.890	-0.0195	0.0225
InregularY	-0.0026	0.0246	-0.1100	0.915	-0.0510	0.0457
weeklyincome	-5.34E-0	1.35E-0	-0.4000	0.692	-3.18E-0	2.11E-0
Ininput	0.0309	0.0158	1.9500	0.051	-0.0001	0.0620
internetacc	0.2510	0.0417	6.0100	0.000	0.1690	0.3329
agehhead	-0.0148	0.0039	-3.7500	0.000	-0.0226	-0.0070
labhrs	0.0045	0.0014	3.200	0.001	0.0017	0.0073
readwrite	0.0693	0.0285	2.4300	0.015	0.0134	0.1253
higheredu	0.0148	0.0218	0.6800	0.498	-0.0280	0.0577
hhsize	-0.0241	0.0201	-1.200	0.231	-0.0636	0.0153
1.regIGA	1.3325	0.3983	3.3400	0.001	0.5514	2.1137
1.rsector	0.1189	0.1262	0.9400	0.346	-0.1285	0.3665
_cons	11.0887	0.2620	42.3100	0.000	10.5747	11.6026

Appendix 4: Simultaneous Quantile Regression (0.25 0.50 0.75 0.95)

Pseudo R¬²: (0.25 = 0.2100; 0.50 = 0.2010; 0.75 = 0.1908; 0.95 = 0.1982), bootstrap(20) SEs.

Appendix Chapter 4: Quantile Regression Estimation

Bootstrap replications (20)
1 ---+--- 2 ---+--
- 3 - 4 5
.....

Simultaneous quantile regression	Number of obs =	2637	2,637
bootstrap(20) SEs	.25 Pseudo R2 =	0.21	0.21
	.50 Pseudo R2 =	0.201	0.201
	.75 Pseudo R2 =	0.1908	0.1908
	.95 Pseudo R2 =	0.1982	0.1982

		Bootstrap				
Infcapital	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
q25						
Intotalrem	0.0432167	0.0242898	1.78	0.075	-0.0044124	0.0908459
Inprofits	0.3397277	0.0483356	7.03	0.000	0.244948	0.4345075
Ineduexp	0.0051435	0.0113778	0.45	0.651	-0.017167	0.027454
InregularY	-0.0347527	0.019892	-1.75	0.081	-0.0737584	0.004253
weeklyincome	1.17E-07	9.48E-07	0.12	0.902	-1.74E-06	1.98E-06
Ininput	0.0798088	0.0096288	8.29	0.000	0.0609279	0.0986896
internetacc	0.1721719	0.0343329	5.01	0.000	0.1048496	0.2394943
agehhead	-0.0128332	0.003653	-3.51	0.000	-0.0199963	-0.00567
labhrs	0.0079742	0.0011391	7.00	0.000	0.0057405	0.0102079
readwrite	0.0298772	0.0106284	2.81	0.005	0.0090364	0.0507181
higheredu	-0.0861602	0.0223749	-3.85	0.000	-0.1300344	-0.042286
hhsize	0.0074772	0.0204631	0.37	0.715	-0.0326483	0.0476027
1.regIGA	0.9464411	0.1445134	6.55	0.000	0.6630693	1.229813
1.rsector	-0.153884	0.0928842	-1.66	0.098	-0.3360178	0.0282498
_cons	5.855999	0.5260321	11.13	0.000	4.824518	6.887479
q50						
Intotalrem	0.0189511	0.0130582	1.45	0.147	-0.0066543	0.0445564
Inprofits	0.3257121	0.0383349	8.50	0.000	0.2505424	0.4008819
Ineduexp	0.0084585	0.0073563	1.15	0.250	-0.0059663	0.0228832
InregularY	-0.0089352	0.0174688	-0.51	0.609	-0.0431893	0.025319
weeklyincome	-2.16E-08	7.01E-07	-0.03	0.975	-1.40E-06	1.35E-06
Ininput	0.0595622	0.0088162	6.76	0.000	0.0422748	0.0768496
internetacc	0.1476799	0.0195992	7.54	0.000	0.1092485	0.1861114

agehhead	-0.0117456	0.0030677	-3.83	0.000	-0.017761	-0.00573
labhrs	0.0062352	0.0010418	5.99	0.000	0.0041924	0.0082781
readwrite	0.077022	0.0193001	3.99	0.000	0.039177	0.114867
higheredu	-0.0561823	0.017905	-3.14	0.002	-0.0912916	-0.021073
hhsize	-0.0248806	0.0189729	-1.31	0.190	-0.0620839	0.0123227
1.regIGA	1.047929	0.1356805	7.72	0.000	0.7818778	1.313981
1.rsector	-0.2157	0.1000784	-2.16	0.031	-0.4119406	-0.019459
_cons	7.183691	0.392823	18.29	0.000	6.413417	7.953966
q75						
Intotalrem	0.009626	0.0124283	0.77	0.439	-0.0147442	0.0339962
Inprofits	0.2447103	0.024814	9.86	0.000	0.1960532	0.2933673
Ineduexp	0.0157728	0.0078265	2.02	0.044	0.0004261	0.0311195
InregularY	0.0126178	0.0176152	0.72	0.474	-0.0219233	0.0471589
weeklyincome	-2.17E-07	1.01E-06	-0.22	0.830	-2.19E-06	1.76E-06
Ininput	0.0381879	0.010381	3.68	0.000	0.0178322	0.0585436
internetacc	0.1746852	0.0480854	3.63	0.000	0.080396	0.2689743
agehhead	-0.0114206	0.0034456	-3.31	0.001	-0.018177	-0.004664
labhrs	0.0051774	0.0009195	5.63	0.000	0.0033743	0.0069805
readwrite	0.0576212	0.0211356	2.73	0.006	0.016177	0.0990654
higheredu	-0.0075937	0.0211929	-0.36	0.720	-0.0491501	0.0339627
hhsize	-0.0257281	0.0166865	-1.54	0.123	-0.0584482	0.006992
1.regIGA	1.332824	0.198828	6.70	0.000	0.9429482	1.722699
1.rsector	-0.2223589	0.0824593	-2.70	0.007	-0.3840507	-0.060667
_cons	9.051309	0.316702	28.58	0.000	8.430298	9.67232
q95						
Intotalrem	-0.0021829	0.0145609	-0.15	0.881	-0.030735	0.0263692
Inprofits	0.1723846	0.0252663	6.82	0.000	0.1228406	0.2219285
Ineduexp	0.0014901	0.0107331	0.14	0.890	-0.0195561	0.0225362
InregularY	-0.0026365	0.0246879	-0.11	0.915	-0.0510462	0.0457733
weeklyincome	-5.34E-07	1.35E-06	-0.40	0.692	-3.18E-06	2.11E-06
Ininput	0.0309507	0.0158746	1.95	0.051	-0.0001774	0.0620788
internetacc	0.251013	0.0417992	6.01	0.000	0.1690502	0.3329757
agehhead	-0.0148435	0.0039576	-3.75	0.000	-0.0226039	-0.007083
labhrs	0.0045665	0.0014249	3.20	0.001	0.0017725	0.0073604
readwrite	0.0693685	0.0285407	2.43	0.015	0.0134038	0.1253331
higheredu	0.0148201	0.0218793	0.68	0.498	-0.0280824	0.0577226
hhsize	-0.0241441	0.0201367	-1.20	0.231	-0.0636294	0.0153413
1.regIGA	1.332582	0.3983827	3.34	0.001	0.5514056	2.113758
1.rsector	0.1189927	0.1262318	0.94	0.346	-0.1285314	0.3665168
_cons	11.0887	0.262087	42.31	0.000	10.57478	11.60262

Appendix 5A OLs estimation of the impact of remittances on post-shock consumption for all households

Source	SS	df	MS	Number of obs	=	2,345
				F(14, 2330)	=	60.3900
Model	700.5882	14	50.04202	Prob > F	=	0.0000
Residual	1930.647	2,330	0.828604	R-squared	=	0.2663
				Adj R-squared	=	0.2618
Total	2631.235	2,344	1.122541	Root MSE	=	0.9103
lnavghhcon~p	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
lntotinterem	0.02546	0.008929	2.85	0.0040	0.0079518	0.0429691
lntotdomrem	0.01237	0.00396	3.12	0.0020	0.0046051	0.0201348
lnprofits	0.027359	0.004082	6.7	0.0000	0.0193546	0.0353629
lnempincome	0.016178	0.00619	2.61	0.0090	0.0040396	0.0283166
lneduexp	-0.01453	0.005004	-2.9	0.0040	-0.0243386	-0.0047139
lnsoldpropty	0.007432	0.005855	1.27	0.2040	-0.0040491	0.0189125
lnfrndfam	0.007829	0.004167	1.88	0.0600	-0.0003436	0.0160007
lnsavings	0.114602	0.175641	0.65	0.5140	-0.2298271	0.4590316
agehhead	-0.00236	0.001277	-1.85	0.0650	-0.0048624	0.0001463
rreadwrite	0.432221	0.062076	6.96	0.0000	0.3104909	0.5539505
rlabhrs	0.010586	0.003843	2.75	0.0060	0.0030491	0.0181221
hhsize	-0.1062	0.006264	-16.95	0.0000	-0.1184832	-0.0939167
1.rsector	-0.33704	0.045515	-7.4	0.0000	-0.4262926	-0.2477828
1.north_ce~l	-0.13409	0.053036	-2.53	0.0120	-0.2380968	-0.0300923
_cons	7.564097	0.09743	77.64	0.0000	7.373038	7.755155

Appendix 5B. OLs estimation of the impact of remittances on post-shock consumption for most severely shock affected households

mostsev = 1	SS	df	MS	Number of obs		1,428
				F(14, 1413)		36.05
Source	440.43185	14	31.45942	Prob > F		0
Model	1232.9205	1,413	0.872555	R-squared		0.2632
Residual				Adj R-squared		0.2559
Total	1673.3523	1,427	1.172637	Root MSE		0.93411
lnavghhcon~p	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
lntotinterem	0.0240689	0.0112461	2.14	0.033	0.0020081	0.0461297
lntotdomrem	0.0069381	0.0052749	1.32	0.189	-0.0034095	0.0172856
lnprofits	0.0283334	0.0053389	5.31	0	0.0178605	0.0388064
lnempincome	0.0079627	0.008026	0.99	0.321	-0.0077814	0.0237068
lneduexp	-0.016343	0.006688	-2.44	0.015	-0.029462	-0.0032231
lnsoldpropty	0.000705	0.0091864	0.08	0.939	-0.0173154	0.0187254
lnfrndfam	0.0031611	0.006281	0.5	0.615	-0.00916	0.0154822
lnsavings	-0.341951	1.350413	-0.25	0.8	-2.990982	2.30708
agehhead	-0.002802	0.001664	-1.68	0.092	-0.0060664	0.000462
rreadwrite	0.4831574	0.0808472	5.98	0	0.324564	0.6417508
rlabhrs	0.0178845	0.0049792	3.59	0	0.008117	0.027652
hhsize	-0.10642	0.008483	-12.55	0	-0.1230606	-0.0897793
1.rsector	-0.306077	0.0582831	-5.25	0	-0.420408	-0.1917464
1.north_ce~l	-0.132117	0.072648	-1.82	0.069	-0.2746263	0.0103927
_cons	7.541636	0.1272583	59.26	0	7.292	7.791271

Appendix 5C. OLS estimation of the impact of remittances on post-shock consumption for less severely shock affected households.

Source	SS	df	MS	Number of obs		917
					F(14, 902)	25.91
Model	274.69524	14	19.62109		Prob > F	0
Residual	683.13073	902	0.757351		R-squared	0.2868
					Adj R Squared	0.2757
Total	957.82597	916	1.045662	Root MSE	Root MSE	0.87026
lnavghhcon~p	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
lntotinterem	0.0269291	0.0147851	1.820	0.069	-0.0020881	0.0559464
lntotdomrem	0.0211256	0.0060153	3.510	0.000	0.0093199	0.0329313
lnprofits	0.0256531	0.0063115	4.060	0.000	0.0132661	0.0380401
lnempincome	0.0313466	0.0097975	3.200	0.001	0.012118	0.0505753
lneduexp	-0.011422	0.0075185	-1.520	0.129	-0.0261775	0.0033339
lnsoldpropty	0.0089384	0.0076901	1.160	0.245	-0.0061542	0.024031
lnfrndfam	0.0088416	0.0057831	1.530	0.127	-0.0025083	0.0201915
lnsavings	0.1148205	0.1755907	0.650	0.513	-0.2297935	0.4594344
agehhead	-0.001589	0.001994	-0.800	0.426	-0.0055027	0.0023241
rreadwrite	0.3363557	0.0972821	3.460	0.001	0.1454301	0.5272814
rlabhrs	-0.00272	0.0060737	-0.450	0.654	-0.0146401	0.0092002
hhsize	-0.107741	0.0092842	-11.600	0.000	-0.1259621	-0.0895199
1.rsector	-0.405277	0.0734809	-5.520	0.000	-0.5494901	-0.2610632
1.north_ce~l	-0.1412	0.0777587	-1.820	0.070	-0.2938087	0.0114092
_cons	7.647585	0.1535168	49.820	0.000	7.346293	7.948877

Appendix 5D All households (interaction effects)

Source SS	df	MS	Number of obs			2345
				F(15, 2329)		56.75
Model	704.29561	15	46.9530407	Prob > F		0
Residual	1926.9397	2,329	0.827367848	R-squared		0.2677
				Adj R-squared		0.263
Total	2631.2353	2,344	1.12254067	Root MSE		0.9096
lnavghhcon~p	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
lntotinterem	0.0068806	0.0125155	0.55	0.583	-0.0176622	0.0314234
lntotdomrem	0.0121622	0.0039579	3.07	0.002	0.0044008	0.0199237
lnprofits	0.027299	0.0040788	6.69	0	0.0193007	0.0352974
lnempincome	0.0163127	0.0061857	2.64	0.008	0.0041826	0.0284427
lneduexp	-0.014524	0.0050001	-2.9	0.004	-0.0243286	-0.0047185
lnsoldpropty	0.0077526	0.0058522	1.32	0.185	-0.0037235	0.0192286
lnfrndfam	0.0078919	0.0041644	1.9	0.058	-0.0002744	0.0160581
lnsavings	0.1157365	0.175511	0.66	0.51	-0.2284375	0.4599106
agehhead	-0.002308	0.0012764	-1.81	0.071	-0.0048108	0.000195
rreadwrite	0.4306526	0.062034	6.94	0	0.309005	0.5523003
rlabhrs	0.0105376	0.0038404	2.74	0.006	0.0030066	0.0180687
hhsize	-0.105917	0.0062606	-16.92	0	-0.1181938	-0.0936399
rsector#						
c.						
lntotinterem						
1	0.0373716	0.0176546	2.12	0.034	0.0027514	0.0719919
1.rsector	-0.35845	0.0465927	-7.69	0	-0.449817	-0.2670821
1.north_ce~l	-0.13306	0.0529985	-2.51	0.012	-0.2369888	-0.0291305
_cons	7.57664	0.0975375	77.68	0	7.38537	7.767909

Appendix 5E Most severely affected households (Interaction effects)

mostsev = 1						
Source:	SS	df	MS	Number of obs		1,428
				F(15, 1412)		34.04
Model	444.405646	15	29.627043	Prob > F		0
Residual	1228.94666	1,412	0.870358826	R-squared		0.2656
				Adj R-squared		0.2578
Total	1673.35231	1,427	1.17263652	Root MSE		0.93293
lnavghhcon~p	**coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
lntotinterem	-0.0002212	0.0159807	-0.01	0.989	-0.0315696	0.0311272
lntotdomrem	0.0068363	0.0052685	1.3	0.195	-0.0034987	0.0171713
lnprofits	0.0278273	0.0053374	5.21	0	0.0173573	0.0382974
lnempincome	0.0080718	0.008016	1.01	0.314	-0.0076528	0.0237964
lneduexp	-0.0163684	0.0066796	-2.45	0.014	-0.0294713	-0.0032654
lnsoldpropty	0.0014393	0.0091813	0.16	0.875	-0.016571	0.0194497
lnfrndfam	0.0031146	0.0062731	0.5	0.62	-0.0091911	0.0154202
lnsavings	-0.3290933	1.348726	-0.24	0.807	-2.974816	2.316629
agehhead	-0.0027605	0.001662	-1.66	0.097	-0.0060208	0.0004999
rreadwrite	0.4803357	0.0807561	5.95	0	0.3219208	0.6387507
rlabhrs	0.0179746	0.0049732	3.61	0	0.008219	0.0277301
hhsize	-0.1055041	0.0084832	-12.44	0	-0.1221451	-0.0888631
rsector#						
c.						
lntotinterem						
1	0.0475905	0.0222724	2.14	0.033	0.0039	0.0912811
1.rsector	-0.3348101	0.0597427	-5.6	0	-0.4520042	-0.217616
1.north_ce~l	-0.1333036	0.0725586	-1.84	0.066	-0.2756378	0.0090307
_cons	7.558705	0.1273488	59.35	0	7.308891	7.808518

Appendix 5F Most severely affected households (Interaction effects)

less_sev = 1						
Source	SS	df	MS	Number of obs	=	917
					F(15, 901)	24.19
Model	275.012278	15	18.3341519		Prob > F	0
Residual	682.813689	901	0.757839833		R-squared	0.2871
					Adj R sqr	0.2753
Total	957.825967	916	1.04566154		Root MSE	0.87054
lnavghhcon~p	coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
lntotinterem	0.0180016	0.0202301	0.8900	0.3740	-0.0217021	0.0577052
lntotdomrem	0.0209372	0.0060243	3.4800	0.0010	0.0091139	0.0327605
lnprofits	0.0259165	0.0063267	4.1000	0.0000	0.0134997	0.0383333
lnempincome	0.0314247	0.0098014	3.2100	0.0010	0.0121884	0.0506611
lneduexp	-0.0114158	0.0075209	-1.5200	0.1290	-0.0261763	0.0033447
lnsoldpropty	0.00901	0.0076934	1.1700	0.2420	-0.006089	0.0241091
lnfrndfam	0.0088493	0.005785	1.5300	0.1260	-0.0025042	0.0202029
lnsavings	0.1146062	0.1756477	0.6500	0.5140	-0.23012	0.4593324
agehhead	-0.0015536	0.0019954	-0.7800	0.4360	-0.0054698	0.0023626
rreadwrite	0.3359861	0.0973152	3.4500	0.0010	0.1449954	0.5269769
rlabhrs	-0.0028324	0.0060781	-0.4700	0.6410	-0.0147613	0.0090965
hhsize	-0.1079188	0.0092912	-11.6200	0.0000	-0.1261538	-0.0896838
rsector#						
c.						
lntotinterem						
1	0.0189822	0.0293481	0.6500	0.5180	-0.0386165	0.0765808
1.rsector	-0.4152821	0.0751148	-5.5300	0.0000	-0.5627023	-0.2678618
1.north_ce~l	-0.1392699	0.077841	-1.7900	0.0740	-0.2920406	0.0135008
_cons	7.653547	0.1538427	49.7500	0.0000	7.351615	7.955478

Appendix 5a: Average Household Consumption Estimation: All Households

Source	SS	df	MS	Number of obs		2,345
				F(15, 2329)		60.54
Model	738.101	15	49.2067	Prob > F		0.0000
Residual	1893.134	2,329	0.81285	R^2		0.2805
				Adj R^2		0.2759
Total	2631.235	2,344	1.12254	Root MSE		0.90158
Inavghhcon~p	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Intotinterem	0.0238	0.0088	2.700	0.0070	0.0065	0.0411
Intotdomrem	0.0113	0.0039	2.880	0.0040	0.0036	0.0190
Inprofitloss	0.0264	0.0040	6.630	0.0000	0.0186	0.0343
agehhead	-0.0025	0.0013	-2.020	0.0440	-0.0050	-0.0001
rreadwrite	0.4407	0.0627	7.030	0.0000	0.3177	0.5637
Ineduexp	-0.0140	0.0049	-2.830	0.0050	-0.0237	-0.0043
labhrs	0.0010	0.0015	0.680	0.4970	-0.0019	0.0040
Inempincome	0.0218	0.0084	2.610	0.0090	0.0054	0.0382
rsoldpropty	-11.0557	54.1199	-0.200	0.8380	-117.1839	95.0726
frndfam	0.0000	0.0000	7.770	0.0000	0.0000	0.0000
depend	0.0048	0.0175	0.270	0.7850	-0.0296	0.0392
hhsize	-0.1146	0.0121	-9.490	0.0000	-0.1383	-0.0909
rsector	-0.3174	0.0452	-7.020	0.0000	-0.4060	-0.2287
redconsump	0.0325	0.0451	0.720	0.4720	-0.0561	0.1210
numtime	0.0161	0.0198	0.810	0.4160	-0.0227	0.0548
_cons	7.5329	0.0957	78.730	0.0000	7.3452	7.7205

Appendix 5b: Average Household Consumption Estimation: Most Severe Households

Source	SS	df	MS	Number of obs		1,976
				F(15, 1960)		51.88
Model	643.2402	15	42.8827	Prob > F		0.000
Residual	1620.234	1,960	0.82665	R^2		0.2842
				Adj R^2		0.2787
Total	2263.474	1,975	1.14606	Root MSE		0.9092
Inavghhcon~p	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Intotinterem	0.0277	0.0096	2.880	0.0040	0.0088	0.0465
Intotdomrem	0.0090	0.0043	2.100	0.0360	0.0006	0.0175
Inprofitloss	0.0250	0.0044	5.680	0.0000	0.0163	0.0336
agehhead	-0.0025	0.0014	-1.790	0.0740	-0.0051	0.0002
rreadwrite	0.4839	0.0690	7.010	0.0000	0.3485	0.6192
Ineduexp	-0.0141	0.0055	-2.560	0.0100	-0.0248	-0.0033
labhrs	0.0016	0.0016	0.950	0.3400	-0.0016	0.0047
Inempincome	0.0196	0.0091	2.170	0.0300	0.0019	0.0374
rsoldpropty	1586.7390	1055.3620	1.500	0.1330	-483.0111	3656.4890
frndfam	0.0000	0.0000	7.100	0.0000	0.0000	0.0000
depend	0.0065	0.0196	0.330	0.7400	-0.0319	0.0449
hhsize	-0.1204	0.0136	-8.830	0.0000	-0.1471	-0.0936
rsector	-0.2984	0.0489	-6.100	0.0000	-0.3943	-0.2025
redconsump	0.0550	0.0658	0.840	0.4030	-0.0741	0.1841
numtime	0.0316	0.0370	0.850	0.3930	-0.0409	0.1042
_cons	7.5109	0.1095	68.590	0.0000	7.2961	7.7256

Appendix 5c. Average Household Consumption Estimation: Less Severe Households

Source	SS	df	MS	Number of obs		369
				F(15, 353)		9.49
Model	105.3984	15	7.02656	Prob > F		0
Residual	261.3576	353	0.74039	R-squared		0.2874
				Adj R-squared		0.2571
Total	366.756	368	0.99662	Root MSE		0.86046
	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Intotinterem	0.0030	0.0227	0.130	0.8960	-0.0417	0.0476
Intotdomrem	0.0210	0.0096	2.190	0.0290	0.0021	0.0398
Inprofitloss	0.0335	0.0098	3.430	0.0010	0.0143	0.0527
agehhead	-0.0022	0.0031	-0.690	0.4900	-0.0083	0.0040
rreadwrite	0.2178	0.1554	1.400	0.1620	-0.0878	0.5235
Ineduexp	-0.0102	0.0116	-0.880	0.3780	-0.0330	0.0125
labhrs	-0.0013	0.0043	-0.300	0.7650	-0.0097	0.0071
Inempincome	0.0213	0.0233	0.920	0.3600	-0.0244	0.0671
rsoldpropty	-26.2751	52.5239	-0.500	0.6170	-129.5742	77.0239
frndfam	0.0000	0.0000	2.920	0.0040	0.0000	0.0000
depend	-0.0098	0.0400	-0.250	0.8060	-0.0884	0.0687
hhsize	-0.0875	0.0265	-3.300	0.0010	-0.1397	-0.0353
rsector	-0.4366	0.1240	-3.520	0.0000	-0.6805	-0.1928
redconsump	0.0552	0.0639	0.860	0.3890	-0.0705	0.1809
numtime	0.0381	0.0460	0.830	0.4080	-0.0523	0.1284
_cons	7.4671	0.2821	26.470	0.0000	6.9123	8.0218

GLOSARY OF TERMS

IGA – Income Generating Activity

LMIC – Low- and Medium-Income Countries

FDI – Foreign Direct Investment

ODA – Other Development Assistance

SSA – Sub Sahara Africa

GDP – Gross Domestic Product

IOM – International Organization for Migration