EFFECTS OF REMITTANCES ON INCOME INEQUALITY IN KENYA

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DECLARATION

I declare that this research report is my original work and has not been submitted for the award of a degree in any other university or institution

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This research report has been submitted for examination with my approval as the University Supervisor.

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SIGNATURE .... **DATE:** 02-12-2022 ....

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DEDICATION

I dedicate this work to my late mum, Alice Wanjiru, for her positivity and for always believing in the impossible.

ACKNOWLEDGMENT

The success of this paper was a result of support from a multitude of individuals. Great appreciation to my supervisor Prof. Tabitha Kiriti Ng'ang'a, for her assistance, valuable comments, and constructive criticism.

Special thanks to my family and friends for their support throughout this journey.

Finally, my gratitude to the Lord God Almighty for being the firm foundation on which my life is built.

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ABSTRACT

The role of remittances on inequality in developing countries has remained a debatable topic in developing literature, and a consensus has not been reached on whether remittances reduce inequality or not. This paper examines how remittances affect income inequality in Kenya by specifically establishing the nature of remittance-receiving households in Kenya and further determining how remittances affect income inequality in Kenya. The paper used the 2015/2016 Kenya Integrated Household Budget Survey (KIHBS) data. By estimating the treatment effect model and counterfactual approach, the study established that the nature of remittance-receiving households in Kenya is purely remittance dependency. There was an 80 per cent reduction in the working hours among the households who received remittances, which implied that the nature of remittance-receiving households in Kenya is accompanied by the income substitution effect where the household members reduce their working hours, and labour supply, as they receive the non-labour income flows, this is labour supply distortive in nature. On the second objective, the IV/2SLS model on the income remittance inequality impact established the existence of a negative and significant correlation between household consumption and remittance at the bottom quantile, by contrast, the relationship is positive and significant for the top quantile. If the share of remittance increases by Kenya Shillings 1, then per capita consumption of the poorest quantile decreases by 262.3 per cent while the per capita consumption increases by 51.8 per cent for the top quantile households. The impact of remittance on inequality which has been identified as being positive and significant among the rich as per the study findings implies that migration tends to increase inter-household inequality since richer households are likely to secure remittances through inheritance hence financing more family members to migrate. This study, therefore, concludes that; receiving remittances tags along prospects of lowering inequality in Kenya. Poor households may, however, be limited in accessing migration benefits due to

difficulty in financing the movement. Adjusting for the counterfactual effect in the top quantile will have more households receiving remittances and increasing remittance amounts, which suggests that remittances could potentially lead to skewing of income inequality across households (the poor and the rich). The study recommends policies aimed at enabling poor households to send their migrants to developed countries, such as the provision of more credit opportunities, enhancing education facilities to enable them to gain skills required for international migration, and making information regarding migration/ remittances easily accessible to poor households and finally strengthening the legal status of contracts among potential migrants and foreign employers.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study.

The importance of domestic as well as international remittances to developing economies cannot be overlooked. Here in Kenya, domestic and international migration has become the norm as the young generation moves from their homes to other local regions or travels abroad in search of greener pastures. Once the migrants settle in their new environment, they cater for not only their own livelihood but also that of their families left behind through remittances.

1.1.1 International Remittances

International remittances, commonly referred to as remittances, refer to transfers by migrants. Migrants are individuals who move from their original economy and become residents in another economy (IMF, 2009); funds remitted back home by such migrants are referred to as remittances. Unlike the domestic methods of remittances which are not easily traceable and measurable, a higher proportion of remittances from international sources pass by official methods, including Operators involved in money transfers, Banks while others use Non-Financial Institutions. Unofficial funds transmission methods currently used include funds transferred through courier services, families, relatives, friends, or oneself and the use of the hawala system (IMF, 2009). Using the 2004 World Bank data on remittances, Freund and Spatafora (2005) found that informal funds transfer methods amounted to 35 to 75 per cent of the formal remittances to developing economies.

For the last three decades, less developed economies experienced increased remittance flows, accounting for a higher proportion of all international inflows (Adams & Cuecuecha, 2013). As per data from the World Bank (2019), foreign remittances inflows to less developed countries were approximately US Dollars 529 billion in 2018, which substantially rose from US Dollars 47 billion in 1980.

In 2017 Kenya received US Dollars 1.9 billion of the total foreign remittances sent to Sub-Saharan Africa. This amount increased significantly to US Dollars 2.7 billion in 2018 and US Dollars 2.8 billion in 2019. As per World Bank (2020), the 2019 inflows to Kenya are US Dollars 2.8 billion, making Kenya the third-highest recipient in Sub-Saharan Africa after Nigeria and Ghana. Figure 1 is a ranking of the top 10 recipient countries for foreign remittances in African countries. Nigeria remained a primary remittance recipient in African countries in the Sub-saharan zone, followed by Ghana at US Dollars 23.8 billion and 3.5 billion, respectively.

Figure 1:Top Remittance Recipients in Sub-Saharan African Counties in 2019 (US Dollars in Billions)
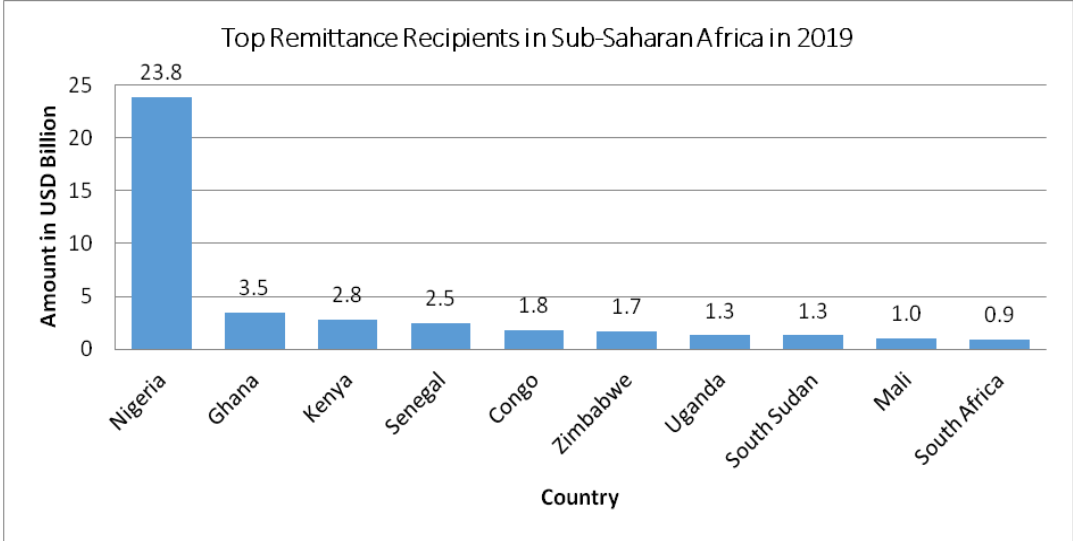
Source: World Bank (2020)

In Macroeconomics, remittances are a critical component of the Kenyan economy. According to KIPPRA (2017), remittances received in Kenya substantially stabilise the Kenyan currency, the balance of payments deficits and promote real and construction sectors.

According to the World Bank (2020), Kenya is among the leading beneficiary of Sub-Saharan Africa remittances. According to Central Bank of Kenya (CBK) data, since 2004, remittances in Kenya have been on an upward trend. In particular, international remittance flows to Kenya stood at an estimated US Dollars 338 million in 2004 before rising steadily to US Dollars 2.84 billion in 2019. Data further indicate that from 2015 to 2019, remittances in Kenya improved by over 80 per cent, mainly attributed to the growth of inflows from North America and Europe. Remittance inflows from Europe increased by 45 per cent, while those from North America increased by 35 per cent; those from the rest of the world declined by 14 per cent. Figure 2 shows the upward trend in remittances received in Kenya between 2010 and 2019. The vertical axis represents the amount of remittance in million US Dollars by the migrants while the horizontal axis represents the time in years.

Figure 2: Migrant Remittances to Kenya (US Dollars in Millions)
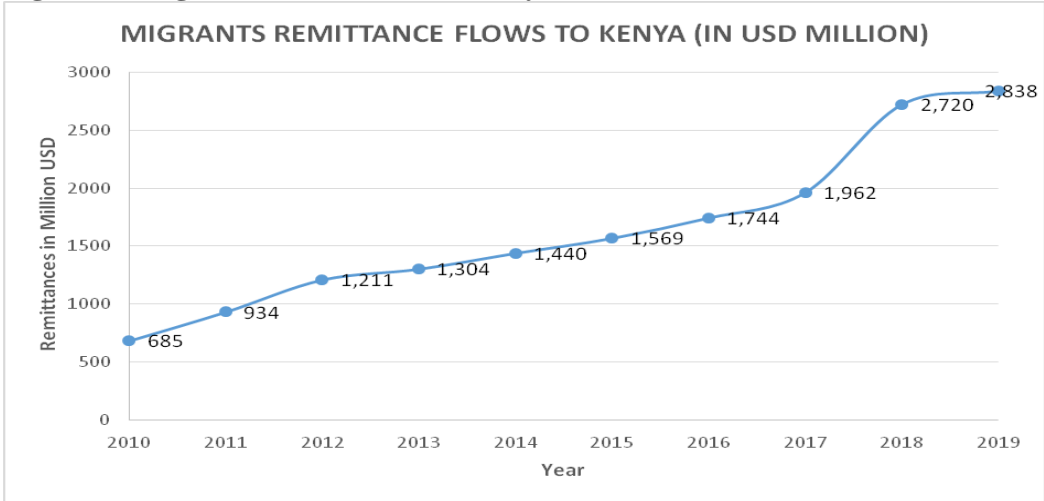
Source: Computation of the author using World Bank data (2020)

The positive contribution of diaspora remittances to Kenya coupled with the remarkable positive trend in the volume of the remittances sent to the Kenyan economy, even without accounting for those remitted through the informal mechanisms, led the Kenyan government to develop the Kenya Diaspora Policy in 2014 which is part of the Kenya Vision 2030 flagship project. Part of the policy's objectives is to stimulate diaspora remittances inflows into Kenya through a number of strategies that include; reducing the cost of remitting money, improving consular services instrumental in addressing concerns of the Kenyan diaspora, amongst other strategies (The Republic of Kenya, 2014).

The high volumes of remittances directed to less developed nations have contributed to the increased empirical examination of the impacts of such remittances especially on developmental impacts in developing economies. Economics' literature have portrayed remittances as the main driver of growth in the economy through enhancing consumption as well as investments (Anyanwu & Erhijakpor, 2010), promotion of institutional quality (Catrinescu et al., 2009). According to Jena (2018), remittances act as drivers of investment at the micro-level, while (Yang & Choi, 2007) view remittances as a source of an individual's health improvement and education enhancement.

1.1.2 Inequality

A society's fairness is demonstrated by how social, political, and economic benefits are shared. Inequality occurs when individuals belonging to a specific region, class, gender, ethnicity or other groups are favoured rather than those who work the hardest, are most productive, or need the most help (Sivi, 2013). Such favouritism results in variation in living standards amongst people in a society and hence inequality, which is portrayed by; unequal distribution of economic

welfare, differences in well-being and income distribution, unequal access to social services, and political rights (SID, 2004).

Social Inequality focuses on the difference in access to livelihood opportunities, differences in well-being, and physical health. The difference mainly arises from the level and quality of education as well as access to public services (Owiti, 2015). According to Sivi (2013), the rich or wealthy people have the upper hand when accessing education over those from the poor households. 20 per cent of the wealthiest household had an average high school attendance of 86 per cent with 20 per cent of the poor households only having 61 per cent high school attenance rate. Primary school attendance amongst the wealthiest 20 per cent is 12 per cent as compared to just 4 per cent attendance among the poorest 20 per cent. In regional comparison, Nairobi residents have fifteen times more access to secondary education as compared to their counterparts in Turkana County.

Political inequality is the difference in access to power and public resources (Owiti, 2015). Economies with high inequality are prone to more violence by marginalised groups in terms of either their ethnic belonging, religious belief, gender, or even geographical location. The Kenya 2007 post-election violence is a good example of violence from marginalised groups; it was a protest of ethnic groups aggrieved from power where most tribes took the opportunity to revenge against tribal misdeeds as well as regain resources they believed belonged to them (Oucho, 2010).

Economic inequality is observed in the unequal distribution of national income in an economy; this negatively impacts a country's poverty reduction efforts, stability and economic growth (Sivi, 2013). For example, SID (2004), report noted that the richest 10 per cent Kenyan

households control 42 per cent of the national income in total in the country, with those at the 10 per cent in the bottom controlling just 1 per cent of the income in total. This means that all measures taken in a high-inequality economy to reduce poverty and accelerate economic growth result in the accumulation of more wealth by the rich hence worsening poverty (Sivi, 2013). SID (2004) indicated that for every shilling earned by the poorest 10 per cent of Kenyan households, the richest 10 per cent earned approximately Kenya Shillings 56; this makes poverty reduction difficult in economies with high inequality. Figure 3 shows the income inequality in Kenya in 2019, where the richest 10 per cent controlled 48.2 per cent of the total national income, the richest 1 per cent controlled 15 per cent while the poorest 50 per cent controlled just 14 per cent. The vertical axis represents the share of national income as a percentage while the horizontal axis represents different social classes in the economy, that is, the richest 1 per cent, 10 per cent, and the poorest 50 per cent.

Figure 3: Income inequality, Kenya, 2019

Source: https://wid.world/country/kenya
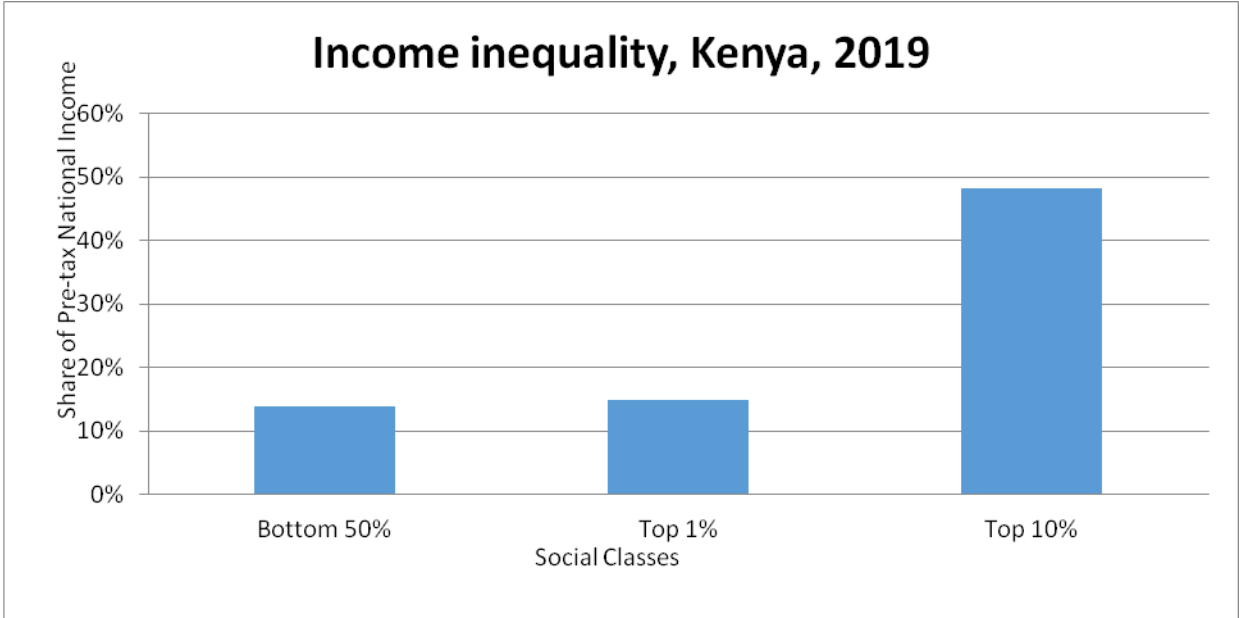
1.2 Remittances and Inequality

The relationship between remittance and inequalities has been explored over the years without reaching a consensus; some studies have observed that remittances increase inequality, while others have concluded that remittances reduce inequality. Pioneer papers by Stark et al. (1986) and Adams (1989) are among studies that showed that an increase in remittances increased inequality. According to Anyanwu (2011), using 1960-2006 data, international remittances largely reduce income inequality in North African countries but increase inequality in Sub-Saharan African countries. Most immigrants were found to be from upper or high-income earning households hence the income they send back to their already well-off homes increased inequality. A study by Ebeke and Le Goff (2009) using data from 80 developing countries between 1970 to 2000 found that remittances affected inequality depending on the immigrants' socioeconomic status. They found out that remittances maintained existing inequality if the migrants were from wealthy households who were also well educated. Remittances, however, decrease inequality when the migrants are from poor households. Ebeke and Le Goff (2009) observed that remittances reduce inequalities in relatively developed economies with low migration costs, especially passport costs, and where the migrants are relatively less skilled.

Bang et al. (2016) found that, in Kenya, remittance impacts were higher on the lowest quantiles as compared to the higher quantile hence reducing inequality in the country. Studies done in Kenya mainly considered the effects of remittances on; economic growth (Mwangi & Mwenda, 2015; Ocharo, 2014), poverty (Bang et al., 2016; Ombaba et al., 2016; Kiiru, 2010), development financially (Misati, 2019; Nyamongo et al., 2012).

1.3 Statement of the problem.

Kenyan diaspora remittances have had an upward trend, for instance, they moved from $ 338 million in 2004 to $ 2,838 million in 2019, citing an increase in making remittances, on average, to overtake traditional foreign income earners such as tea, coffee, and tourism (World Bank, 2020). Remittances have been observed to play a part in the country's various sectors, including the reduction of poverty (Kiiru, 2010; Bang et al., 2016), increased economic growth (Ocharo, 2014), and reduction of inequality (Bang et al., 2016) and hence the impacts of remittances cannot be ignored.

In 2015, all United Nations (UN) Members States, Kenya included, adopted the 2030 Agenda for Sustainable Development which has 17 Sustainable Development Goals. These 17 goals, commonly referred to as the SGDs are the heart of enhancing sustainable development by 2030. SDG 10 aims to reduce inequalities among the UN member states (https://sdgs.un.org/goals). The Kenya 2019 inequality levels, according to the World Inequality Database (https://wid.world/country/kenya), indicate that there is still a long way to go for the country to reduce inequality, noting that the top 10 per cent of households control 48.2 per cent of national income totals while 50 per cent at the bottom only controls 14 per cent.

International remittances are considered a key player in inequality; most studies previously done in Kenya mainly focused on how remittances affect economic growth (Mwangi & Mwenda, 2015 and Ocharo, 2014), poverty (Bang et al., 2016, Ombaba et al., 2016 and Kiiru, 2010) and financial development (Misati, 2019 and Nyamongo et al., 2012). To the author's knowledge, only studies by (Bang et al., 2016) focused on the impacts of remittances on inequality, hence the need for further studies.

1.4 Objectives of the study

The main objective of the study is to examine the effects of remittances on income inequality in Kenya. The specific objectives include to:

i.   Establish the nature of remittance-receiving households in Kenya.

ii. Determine the effects of remittances on income inequality, specifically in Kenya.

iii. Draw insights and policy implications from the findings

1.5 Research Questions

i.   What is the nature of remittance-receiving households in Kenya?

ii. What is the effect of remittances on income inequality in Kenya?

iii. What insights and policy implications that can be derived from the study's findings?

1.6 Significance of the Study

The research paper will be significant in three major ways. For a start, there exist scant literature on the effects of remittances on inequality in the Sub-Saharan African nations. In Kenya, specifically, save for the study by Bang et al. (2016), to the authors' knowledge, no other study has examined how remittances affect inequality in Kenya. This presents, by itself, a gap in knowledge that this paper sought to bridge. Secondly, Kenya is among the leading beneficiaries of remittances in Africa. According to data from World Bank year (2020), year 2019, Kenya received approximately US Dollars 2.8 billion in remittances, making Kenya the third-highest recipient after Nigeria and Ghana. This remarkably high presence of remittances makes Kenya a suitable and intriguing case to examine their effects on inequality. Third, since equity is one of the priority policy goals in Kenya as envisioned in Kenya's Vision 2030 and that Kenya is a leading recipient of remittances, this study seeks to offer insights on how remittances affect

income inequality in Kenya. Finally, the study will form the basis for policymakers' decision-making.

1.7 Scope of the study

This research uses the Kenya Integrated Household Budget Survey (KIHBS) data for the year 2015/2016. KIHBS is a nationally representative data covering households in all 47 counties in Kenya. With respect to the remittances, the KIHBS dataset contains information on whether a household member received remittances, the amount received, and the channel of sending, among other details such as household demographic characteristics, education, housing conditions, nutrition, education, general health characteristics, household income and credit, access to justice, shocks to household welfare, domestic tourism and information communication technology.

1.8 Organisation of the study

The rest of the paper is organised in this manner: Chapter 2 reviews the theoretical and empirical literature on the effects of remittances on income inequality. The chapter also provides an overview of the reviewed literature by indicating existing gaps and inconsistencies. Chapter 3 presents a conceptual framework, empirical model specification, data type, sources and measurements, and diagnostic tests to be carried out. Chapter 4 is the data analysis as well as presentation and discussion of results, including diagnostic tests and model estimation of the impact of remittances on inequality. Chapter five provides the paper's conclusion summaries and outlines the policy recommendations and further study areas.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter summarises the literature on remittances and inequality. It provides a theoretical model to analyse the effects of remittances on income inequality and reviews empirical studies and results from other researchers on the topic. The chapter further provides a summary and conclusion of reviewed literature.

2.2 Theoretical Literature Review

Several theories have been put across to explain why local and international migrants send remittances to their families. An observation thereafter was made that the remittances sent not only benefit the sender through development projects but are also beneficial to those left behind. Chami et al. (2005) came up with two theoretical approaches that explain the motivation to remit funds back home.

Chami et al. (2005) argue that remitters send money to their families as there is an altruistic motivation, blood ties, or a connection of some kind. (Adams, 2011) supports this theory by arguing that migrants remit to their families in order to protect them from risks or shocks that they might encounter. The implication of the altruistic theory underpins the idea that family plays a significant role in explaining the remittance choices as migrants take care of those left behind. Becker (1974) was a pioneer of the Altruistic theory where he argued that utility is derived by migrants when they transfer some income to their family whenever their income levels allow. Therefore, migrants experience a maximum level of utilities when they remit

money back to their families. Poirine (1997) gives another reason for the altruistic theory by the migrants, Poirine argues that remittance by migrants is a form of investment payment which are in the form of unofficial loans from their parents when the migrant was in their youthful stages. Poirine (1997) continues to point out that remission by migrants is the payment of the family's informal educational loans that were of help to them so that they can get their education and finally get employed in the modern sector.

The second reason for migrants sending remittances, according to (Chami et al., 2005), is the drive of self-interest, that is, the need to improve their portfolios at home by saving and investing. This explains why the theory is commonly regarded as the portfolio theory, that is, migrants remit since they have investment projects back home (Kiriti-Ng' an'ga, 2012).

Some researchers argue that some migrants remit funds back home due to a combination of the portfolio and atruistic theories. Lucas and Stark (1985), for instance, believe that remittance by migrants is pushed by the contractual agreement with their families where the families, by allowing a family member to migrate, might benefit or gain as risk sharing[1] and mitigation strategy or as a form of investing for surety of future income streams. Lucas and Stark (1985) further argued on a contractual agreement, altruistic and self-interest aspects where migrants remit to be considered for inheritance or to get dignified at home when they return.

2.3 Empirical Literature Review

In Kenya, research conducted by Bang et al. (2016) examined the role of migrants sending part of their earnings to their families on Kenyan income inequality using the World Bank and University of Nairobi's 2009 Kenya Migration Household Survey. They considered remittances

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[1] As an example, Lucas & Stark (1985) observe that in Botswana, remittances increased during the severe droughts and it came as a cushion to the families who had migrants.

as endogenous and used non-agricultural land and cellphone alongside unexpected rainfall in the region as instrumental variables in their analysis. The authors used a quantile regression technique in their study and found that remittances improve income and expenditures by the recipient households. In particular, the research found that sending part of earnings back to the family has more effects on the lower quantiles as compared to the higher quantiles. They considered remittances as endogenous and used whether non-agricultural land and cell phone alongside unexpected rainfall in the region as instrumental variables in their analysis.

Kiiru (2010) researched the role of remittances on poverty in Kenya. By employing a direct approach, where the direct impacts of remittances on welfare are examined and applying Two-Stage Least Squares (2SLS) techniques, Kiiru (2010) found that remittances increased consumption levels of households. The study further finds that households use remittances to act as economic shock absorbers in Kenya. The study further documents that social capital, measured by whether a household belonged to a social group, was significant in explaining remittances and welfare in Kenya. Since remittances appear to be endogenous, the author chose the presence of migrants as the instrument in her analysis. Still, in Kenya, Jena (2018) studied the role of migrant transfers back to their families in the purchase of physical assets. Using daily rainfall as an instrument for remittances, Jena (2018) noted that remittances tend to increase physical investments in Kenya. The study used Kenya's 2009 migration and remittances household survey data

Using a similar approach as Bang et al. (2016), Agwu et al. (2018) examined the effects of international remittances on income inequality in Senegal. In their study, Agwu et al. (2018) choose to use the ownership of non-agricultural land to account for asset ownership and the number of those migrants who return and are ethnically related to the household head. Unlike

Bang et al. (2016), Agwu et al. (2018) deviate from using unexpected rainfall as an instrumental variable. They argue that most families in Sub-Saharan Africa rely on rain-fed agriculture for employment and that the household members rarely save because they practice subsistence agriculture.

Beyene (2014), by the use of household survey data, set out to observe how the Ethiopian poverty and inequality levels were affected by remittances received from abroad. The study considered remittances as endogenous and used religion as an instrument in the analysis. The author constructed a counterfactual consumption equation to examine the hypothetical case of inequality and poverty in the event of families not receiving remittances. Beyene (2014) compared the counterfactual and the actual cases and concluded that remittances back home by migrants lowered poverty levels but not inequality in Ethiopia.

Adams (2005) studied the effects of domestic and foreign remittances on poverty in Guatemala by employing a nationally representative dataset for households. Adams (2005) used the Ordinary Least Squares (OLS) method in his analysis and estimated a counterfactual consumption equation for the families that do not receive remittances. Usage of OLS estimation technique was necessitated by the fact that there was no evidence of household self-selection. Adams (2005) observed that remittances substantially affected poverty levels in Guatemala in the study.

In yet another study, Adams and Cuecuecha (2013) studied the effects of remittances (both internationally and domestic) on investments and penury in Ghana. Authors used distance to railroads and employment rates in Ghana, as an instrument, in modelling the effects of transfers sent back home on investments and poverty in Ghana. Research finds that remittances had

significant effects in reducing poverty levels in Ghana, with the impact of international remittances being larger than domestic remittances. Still, in West Africa, Chiwuzulum et al. (2010) did an examination on the nature of households receiving the remissions and how the remittances affected Nigerian poverty rates and inequalities. Results indicated that remittances had inequality-reducing and poverty-reducing effects.

2.4 Overview of the Literature

The reviewed literature has empirically provided contradictory evidence on the role of remittances in alleviating inequality. Other studies indicated that transfers sent back home by migrants reduce inequality (see, for example, Bang et al., 2016), other studies point those remittances have no effects on inequality (see, for example; Brown & Jimenez (2008)). The reviewed empirical literature further indicates that different instruments can be used to correct endogeneity problems in analyzing the impacts of remittances on inequality.

In Kenya, while Bang et al. (2016) examine the effects of remittances on inequality by use of the 2009 Kenya Migration and Remittances Household surveys, Kiiru (2010) examined the roles of remittances on poverty measured by consumption by using 2005/06 KIHBS data from a direct effect perspective. This paper seeks to extend this discussion and add knowledge to the existing literature by examining the effects of remittances on income inequalities in Kenya by employing a counterfactual approach on the 2015/2016 KIHBS data.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the methodology employed in the paper; it describes how this study was structured and conducted in line with its key objectives. Research methodology provides the conceptual framework, information on data, the empirical model, and diagnostic tests. The chapter provides the methodological framework useful in answering the research questions.

3.2 Theoretical Framework

To observe the impacts of remittances on income inequality, specifically in Kenya, we first seek to use household consumption to proxy household welfare and inequality and, secondly, use the counterfactual approach in determining the effects. We choose to use household consumption rather than income to measure household welfare because it is more reliable and less volatile as compared to income (Deaton, 1997). We also use the indirect effect, which is the counterfactual approach in examining how remittances affect inequality because this approach captures the opportunity cost of migration (Brown & Jimenez, 2008). It captures the effects of what migrants would have contributed to the household if migration would not have occurred.

Now since the goal of our research was to find the impacts of remittances on income inequalities, we closely surveyed the approach used by (Bang et al., 2016; Beyene, 2014; Zhu and Luo, 2008; Brown & Jimenez, 2008). In this approach, we assume that there is an opportunity cost for migration and that the remittances sent by migrants to their household act to replace the income that the household would earn had the individuals not migrated (Zhu & Luo, 2008). The

underlining reasoning and intuition of the approach are to estimate the consumption levels if the migrant would have made a decision to stay, that's, the counterfactual household consumption level (Brown & Jimenez, 2008). In essence, remittances are substitutes for migrants' home income (Chiwuzulum et al., 2010).

To determine the effects of remittances on income inequality, we follow a three steps approach. We will start by estimating the households consumption equation of non-remittance receiving households expressed in a generalised form as:

$$C_i = f(a, g, e, o, loc, hsize) \quad (1)$$

Where C_i is the consumption of non-remittance receiving households, *a,e,g, o,* relates to age, education, gender, then finally occupation of the head of the household, *loc* captures the location, *hsize* relates to the household size.

In step 2, we use the coefficients of equation 1 to predict the consumption levels of remittance-receiving households but by excluding the remittance variable expressed as:

$$C_i^* = f(a, g, e, o, rur, hsize) \qquad (2)$$

Where C_i^* are the predicted values obtained from non-remittance receiving households. Notice that equation 2 estimates a counterfactual consumption equation for the remittances receiving households, that is, the consumption levels if migration did not happen.

The third step is to estimate the consumption equation in the actual case with the remittance variable present. The generalised form is expressed as:

$$C_i^a = f(a, g, e, o, rur, hsize, remit) \qquad (3)$$

Where C_i^a is the actual household consumption level with the remittance variable $remit$ being a variable which equals 1, also called binary if the family receives remittances, 0 otherwise. We include a dummy for remittances since remittance amounts are considered noisy and tend to have measurement problems (see, for example, Bang et al., 2016 and Agwu et al., 2018). Notice that differences in inequality in step 2 and 3, that is, countering facts and actual facts, would then reflect the impacts of remittances (Beyene, 2014 and Zhu & Luo, 2008).

3.3 Empirical Model

In order to estimate the effects of remittances on income inequality, we parameterise equations 1-3 and introduce the error term and the natural log of household consumption. We take the log of household consumption, intending to scale down the consumption values and transform the variable towards normality. Estimable equations based on the conceptual framework are therefore written as:

$$InC_i = a_0 + a_i a + \alpha_2 g_i + \alpha_3 e_i + \alpha_4 loc_i + \alpha_5 hsize_i + \varepsilon_i \qquad (4)$$

$$InC_i^* = a_0 + a_i a + \alpha_2 g_i + \alpha_3 e_i + \alpha_4 loc_i + \alpha_5 hsize_i + \varepsilon_i \qquad (5)$$

$$InC_i^a = a_0 + a_i a + \alpha_2 g_i + \alpha_3 e_i + \alpha_4 loc_i + \alpha_5 hsize_i + \alpha_6 remt_i + \varepsilon_i \qquad (6)$$

Where In is the natural logarithm and ε_i an independent and identical error term (i.i.d).

In estimating equation (6) above, remittance variables might exhibit endogeneity problems because they might tend to correlate with the consumption equation's error term. In the equation,

the endogeneity problem might arise because households that receive remittances, in reality, appear to be richer than those who do not receive. As such, the error terms of consumption levels are correlated with remittances (Agwu et al., 2018). In equation (3), therefore, we would not use the Ordinarily Least Squares Method (OLS) for estimation purposes because OLS might overestimate the effects of remittances on household consumption (Kiiru, 2010).

To avoid reporting biased estimates, we will use the instrumental variable two-stage least squares (2SLS) approach in our estimations[2]. This approach requires that we seek a variable directly related to remittances but indirectly related to consumption levels. Therefore, in this study, we use ownership of non-agricultural land as a binary, taking 1 as the value, if a household own non-agricultural land and 0 otherwise and mobile phone ownership as instruments for remittances (Bang et al., 2016). The use of non-agricultural land[3] is justified because individuals from households with more assets are less likely to migrate and hence have little expectation of them to remit back to their households.

3.4 Data source, measurement, and description of variables

The study uses 2015/2016 data from Kenya Integrated Household Budget Survey (KIHBS), being nationally representative data that covers households in all 47 counties in Kenya. With respect to the remittances, the KIHBS dataset contains information on whether a household member received remittances, the amount received, and the channel of sending, among other information. In the study, the data further provides information on the household head including their age, education, occupation, and household location. The Stata econometric software will be used in the analysis.

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[2] Notice that for robustness checks, we will report both the OLS and 2SLS regression results.
[3] Agricultural land ownership is not considered because despite Kenya being an agricultural dependent country, excess labour supply tends to exist in the rural settings leading to the migration of unoccupied labour force.

3.5 Diagnostic tests

The below diagnostic tests, multicollinearity test, and Heteroscedasticity test, will be used to ensure that the regression results are unbiased.

3.5.1   Multicollinearity test

Multicollinearity occurs when the explanatory variables in the regression model are highly correlated to one another in the regression. Many variables in econometrics, specifically econometrics regression equations, tend to be collinear; what always matters is the extent and the degree of collinearity. Variance Inflation Factor (VIF) was employed to test the multicollinearity. Values that are ten and above show the presence of multicollinearity.

3.5.2   Heteroscedasticity test

Heteroscedasticity is a case in econometrics where an error term does not have a constant variance. Heteroscedasticity, if present, leads to biased standard errors. In order to check the variance of the error term, Breusch Pagan Lagrange Multiplier (BPLM) test was used.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

In this chapter, we present an analysis of data as well as a thorough discussion of the results obtained. The presentation starts with descriptive statistics that summarise the data used; this is followed by diagnostic tests, empirical investigations, and the interpretations of the statistics emanating thereon. In each case, inferences are drawn, and comparisons are made with findings from other studies of a similar nature done elsewhere.

4.2 Descriptive Statistics

Descriptive statistics gives the summary of disparities in the data used. Table 1 shows the computed values of the mean[4], standard deviation[5] , and minimum and maximum values[6] of the data. Consequently, Skewness[7] and Kurtosis[8] are presented.

Table 1: Descriptive Statistics (N= 45877)

Variable	Mean	SD	Min	Max	Skewness	Kurtosis
Remittance	0.3525	0.4778	0	1	0.6173	1.3811
Age_HHH	37.79	16.4281	18	107	0.9526	3.3241
Female Gender	0.4804	0.4996	0	1	0.0786	1.0062

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[4] This is the average value for the variables

[5] This is a measure of variability from the average values

[6] This gives the minimum values and the maximum values of various variables

[7] Skewness gives the degree and direction of asymmetry.

[8] This measures the heaviness of the tails of a distribution. Normally distributed data has kurtosis value of 3

Primary Education	0.3862	0.4869	0	1	.4672852	1.2184
Secondary Education	0.2181	0.4123	0	1	1.365134	2.8635
Tertiary Education	0.1126	0.3162	0	1	2.449788	7.0014
Employed	0.2721	0.4451	0	1	1.0239	2.0484
Rural Residence	0.7602	0.4270	0	1	-1.2187	2.4853
Household Size	4.9298	2.1487	1	28	0.4259	3.1044
Cons_Non_Rem	5123.48	4934.94	161.12	5.53e+05	47.6241	5118.39
Consumption	5583.64	5498.49	9.39	5.53e+05	34.92	3147.69
Agri_Own	0.7435	0.4367	0	1	-1.1151	2.2435
Mobile_Own	0.7271	0.4455	0	1	-1.0196	2.0395

The results in table 1 show that 35 per cent of the families reported having received remittances. However, a standard deviation of 0.4778 shows that close to 47 per cent of the families were not receiving remittances. Consequently, on average, households receiving remittances consumed Kenya Shillings 5583 on a monthly basis, while those that do not receive remittances consumed on average Kenya Shillings 5123, which explains the variance in the impact of migration. Such disparity in access to benefits of migration can be controlled by addressing the issues of endogeneity, that is, outlining the remittances receiving nature of the households

Even though the sample for this analysis included households that have a likelihood of migrating, the issue of poverty is still rampant in the sampled household, based on the fact that the average expenditure of Kenya Shillings 5583 per month translates to Kenya Shillings 186 a day per household which is way below the thresholds of US Dollars 1.90 (World Bank) at the official exchange rate. Comparing this with the average month of consumption with the non-remittance receiving households (Kenya Shillings 5123.48), the difference of Kenya Shillings

460 shows that inequality exists. Imposing policy measures that can impact these households' circumstances to improve consumption can substantially reduce poverty and inequality.

Many households receiving the remittances are in the rural area, accounting for 76 per cent of the sampled data. This shows that inequality is skewed to households mainly residing in rural settlements compared to their counterparts in urban settlements. Consequently, we find that, on average, 27 per cent of these households depend on income from formal employment.

Inequality in education is rampant in these households' receiving remittances since the percentage distribution of the people with education in these households reduces as the level of education rises. For instance, 38 per cent had primary education, 21 per cent had secondary education, while those with tertiary education were represented by 11 per cent of the sampled data.

Despite this, 74 per cent of the households reported owning land for non-agriculture, while 72 per cent reported owning a mobile phone. The relationship between non-agriculture land ownership and families receiving remittances is based on the aspect that households with more properties do not need remittances to obtain credit and insurance against risk. Hence, they cannot resort to sending their members abroad to receive remittances.

Consequently, gender disparity is not rampant since 48 per cent of the household heads were female, with an average age of 37 years. All the variables in the dataset except for residence, ownership of land for agriculture, and ownership of mobile gadgets were positively skewed.

4.3 Diagnostic tests

4.3.1   Multicollinearity test

Variance Inflation Factor (VIF) was employed to carry out multicollinearity. VIF 8.0 and below, shows the absence of multicollinearity, whereas VIF values of 8.0 and above show that multicollinearity actually exists. Also, a VIF of value 1 shows no correlation; and values ranging from 1 to 5 are of a moderate correlation, values greater than 5 are then highly correlated(Miles, 2014). Table 2 is a display of the outcomes of the VIF test:

Table 2: VIF Multicollinearity Test

Variable	VIF	1/VIF
HH_Size	1.09	0.917639
Residence	1.09	0.918242
Employed	1.06	0.947629
Gender	1.04	0.961254
Education Level	1.04	0.964105
Age HHH	1.01	0.986282
Remittance	1.01	0.988887
Mean VIF	1.05	

The VIF index shows that there was a moderate correlation in all the predictor variables in the study conducted; They were all lying in the moderate correlation margin. Moreover, the VIF mean was 1.05, which lies below 8.0, hence the study had no multicollinearity issues.

4.3.2   Heteroscedasticity Test.

The Breusch-Pagan was used to test for heteroscedasticity under the null hypothesis of homoscedasticity was carried out. In this test, if the p-value is smaller than the critical value, we fail to reject the null hypothesis, otherwise, we reject it meaning there exists heteroscedasticity. If heteroscedasticity exists, robust standard errors are used to correct the problem. Table 3 displays the results obtained upon carrying out the heteroscedasticity test:

Table 3: Heteroscedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity
Ho: Constant variance
Variables: fitted values of Consumption
chi2(1) = 5272.71
Prob > chi2 = 0.0000

As per the obtained results, the test statistics is less than 0.05; therefore, we reject the null hypothesis implying that heteroscedasticity is a problem in the residuals. Robust standard errors were used when estimating the model to address the problem. Having carried out the diagnostic tests, we proceeded to estimate the probit model.

4.4 Nature of remittance-receiving households

One key concern in policy is the role of remittances as far as dependency is concerned. The intuition is that remittances (as non-labour income) may lower labour force participation by discouraging remittance-receiving households from working. Based on this, the study aimed at

establishing whether the remittance-receiving households in Kenya depicts the remittance dependency nature or not. Table 4 shows the characteristics of the remittance-receiving households by residence and employment status.

Table 4: Remittances Recipients among Households (N=45877)

	Urban	Rural	Employed	Not Employed
per cent of Remittance Receiving	39.92	66.22	35.87	35.03
per cent of Non-Remittance Receiving	60.08	33.78	64.13	64.97

From the results in table 4, most remittance-receiving households are in rural areas, representing 66.22 per cent. Additionally, 35.87 per cent of the households that receive remittances depend on formal employment as a source of income and receive remittance (as non-labour income). Establishing the nature of the households that receive remittance is important to estimate the impact on employment status and establish the dependency aspect of the remittances.

Ideally, given a longitudinal dataset, households can be subjected to remittances and then be observed on their nature, specifically regarding labour force participation. Given such an ideal situation, the international transfers-receiving families are not related to the labour force participation characteristics of such households. Considering that our dataset is not longitudinal, we do not observe these non-remittance-receiving households, hence the selection problem. Rosenbaum and Rubin (1983) suggest that treatment-effect models can be adopted to address this problem.

Considering that our interest is in establishing the effects of remittances on families participating in the labour force, we estimated the average treatment effect model for these households, in this

case, the treated, against the household that did not receive remittances but had the same features such as place of residence, levels of education and age of household heads as well as the size of the households. The regression modeling treatment results effect are then presented in table 5.

Table 5: Treatment effect model on the Remittance Receiving Households

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Working_Ho~s	Coefficient	Robust std. err.	z	P>|z|	[95% conf. interval]	
ATE						
Remittance						
(1 vs 0)	-.8008757	.1109385	-7.22	0.000	-1.018311	-.5834402
POmean						
Remittance						
0	39.39719	.0713164	552.43	0.000	39.25741	39.53696

The output of the model reveals the Average Treatment Effect (ATE), that is, the effect that could have been experienced if the whole population could have been subjected to treatment. The value of ATE is 0.8009, meaning 80 per cent less in working hours by the households which received remittances. The output also shows that the baseline working hours, the average working hours had the population received no treatment, that is, no remittances, estimated at 39.4.

The results confirm that the nature of the remittance-receiving household is purely dependency. This nature of the remittances receiving household can be argued from the perspective that remittances go along with the substitution effect where the household has an enticement to reduce their working hours and rely on the non-labour income flows, in effect, distorting labour supply decisions of the households. Additionally, receiving remittances may reduce budget

constraints and further increase reservation wages, hence through income effect, there might be a reduction in hours worked by these individuals who have received remittances.

The findings of this study conform with the theoretical perspective of Killingsworth (1983); Funkhouser (1992); and Hanson (2007), who observed negative effects of remittances on the supply of labour force (48 hours), which is explained based on the fact that a rise in income arising not from labour translates to a rise in the purchasing power and reservation wages of the households, thereby decreasing the likelihood of seeking employment and a reduction in the number of working by these individuals who receive remittance

4.5 Model estimation of the impact of Remittances on Income Inequality

To determine how remittances affect income inequality in Kenya, the study used the counterfactual approach, whereby consumption was used as a substitution for household welfare. Considering that the remittances variable exhibited an endogeneity problem because it was correlated with the consumption error term, the OLS approach was unsuitable due to biasness in overestimating the effects of remittances on levels of household consumption. To address this problem, and test the validity of this assumption, the instrumental variables two-stage least squares (IV/2SLS) model was estimated. Two models are presented, the first model is the bottom quantile, while the second is the top quantile representing the rich. Table 6 shows the results of the model.

Table 6: 2SLS Models on Impact of Remittances on Inequality

	Bottom quantile (Poorest 20 per cent)	Top quantile (Richest 20 per cent)
	Ln_Consump	Ln_Consump
Remittance	-2.623[***]	0.518[***]

	(0.0555)	(0.00899)
Age_HHH	0.00119	-0.0000820
	(0.0000327)	(0.00000584)
Female Gender (Household Head)	-0.00416***	0.00178***
	(0.000576)	(0.000247)
Primary	-0.0204***	0.00241***
	(0.000718)	(0.000201)
Secondary	-0.0274***	0.00763***
	(0.00107)	(0.000395)
Tertiary	-0.0618***	0.00974***
	(0.00210)	(0.000547)
Employment	-0.0246***	0.00659***
	(0.000762)	(0.000182)
Place of Residence	-0.0761	-0.0187*
	(0.00246)	(0.000561)
Total Persons In Household	0.596*	-0.0569
	(0.0112)	(0.000143)
Constant	4.758***	9.422***
	(0.0483)	(0.00349)
Observations	37659	37659
Adjusted R^2	0.585.	0.169

Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Two instruments were used in the study: non-agriculture land ownership and mobile phone ownership, as suggested by Sasin (2007) and Gyimah-Brempong & Asiedu (2011). Furthermore, the study considers the welfare-enhancing effect of remittances using the counterfactual approach. This is in the case where the migrant was earning before leaving, hence it would negatively impact the household income of the remaining members of that particular household. The counterfactual approach accounts for the earnings that have been foregone and approximate the net impacts of settlements on families' income. The econometrics analysis of this study

focused on international remittances to Kenya.

The results in table 6 represent a negative and significant relationship between remittances and household consumption in the bottom quantile, the relationship is, however, positive and significant for the top quantile. The model indicates that if remittances increased by Kenya Shillings 1, then per capita consumption of the poorest quantile is decreased by 262.3 per cent while that of the top quantile increases by 51.8 per cent.

The negative relationship between remittances and the bottom quantile, the poor households, traces to Lucas and Stark (1985) altruistic theory and touches on the costs of financing international migration rather than enhancing welfare. The reasoning behind this relationship is that international migration costs are high, hence exceeding the financial possibilities of the migrant's immediate family members. A study done in Pakistan (Ilahi & Jafarey, 1999) revealed that 58 per cent of migrants took credit from relatives in order to cater for the initial costs of their migration, inequality in financing international migration costs results in a negative impact of remittances to poor household income and consumption patterns. Similar assertions were made by Agarwal and Horowitz (2002), who supported the altruism theory on the costs of migration. Considering wage differentials, it may be partially impossible for wages only to compensate migration costs given that it is financed by informal loans from family members, which are repaid later in the form of remittances, hence the negative impact on poor households.

In contrast, the positively significant influence of remittances on income inequality for the wealthy household is supported by Hoddinott (2009), who asserted that migration tends to increase inter-household inequality. He observed that wealthier households are likely to secure remittances through inheritance since resources are collectively owned hence financing

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migration may not be a problem. Additionally, as noted by Koczan and Loyola (2018) and De and Ratha (2012), reducing inequality by remittances to the original country aligns itself on the number of migrant populations abroad. This explains the mixed effects of remittances on inequality since the richer are likely to facilitate the costs of migration; hence more people migrate as compared to the poor households.

Another key aspect in explaining the mixed impact of remittances between the mighty and the weak in society relates to how they are educated. From the results, we see a positive and significant impact of education of the household head for top quantile, while for the bottom quantile, it's negative and significant across all the education levels. Education of the household head at primary school, secondary school and tertiary levels reduced inequality by 2 per cent, 4 per cent and 6 per cent, respectively, amongst poor households. On the contrary, it increased inequality by 0.2 per cent, 0.7 per cent and 0.9 per cent for primary, secondary and tertiary levels, respectively, among richer households. This is in line with Faini (2007), who perceived that richer and more educated migrants have a low likelihood of remitting compared to their less-wealthy counterparts. If the household head is educated, a migrant from the same family is likely to be educated hence remitting. Additionally, according to Bollard et al. (2011), the amount remitted increases with earnings and levels of education. The educated migrants, for example, remit US Dollars 300 more annually, on average, than their less-educated counterparts.

From the results in table 6, the effects of employment on inequality is reduced between the top quantile and bottom quantile. For instance, employment of the household head reduces inequality for poor households by 2 per cent and by 0.6 per cent for the richer households. This is explained by the spillover effect of over effects of remittances. According to Rapoport and Docquier (2006) and Ratha (2007), remittances enable poor households to spend or acquire assets that are likely to raise their productivity, hence reducing inequality which is not the case with richer households since poorer households experience both underemployment and unemployment.

The gender of the household head is key in outlining the inequality as it regards the management of remittances received. From the findings of the study (in table 6), having a female as the household head reduces inequality by 4 per cent in poor households while increasing inequality by 2 per cent in rich households. The results are in line with Debnath and Selim (2009), who noted that whenever women are the direct receivers of remittances, the households experience high economic empowerment.

CHAPTER FIVE

CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of findings, the conclusion of the study, as well as providing the policy recommendations and areas of further research. This section also shows how the study objectives, outlined in the paper, have been accomplished.

5.2 Summary and Conclusion

5.2.1   Nature of remittance-receiving households

The first objective was to investigate the nature of remittance-receiving households in Kenya. The intuition that remittances, in this case, are viewed as income that does not arise from labour may discourage the remaining members of the migrant household from working hence creating the situation of remittance dependency. Based on this, the study aimed at establishing whether the household receiving the remittance depicts the remittance dependency nature or not. The study aimed at establishing how remittances affect labour force participation using the average treatment effect model. The study used households receiving remittances, the treated, against the household that did not receive remittances but were subjected to the same characteristics such as residence, education levels of household head, size and age.

Additionally, working hours were used to measure labour force participation. From the results, the negative average treatment effect value of 0.8009 implied an 80 per cent reduction in the working hours among the households who received remittances. This implies nature of remittance receiving families in Kenya is purely remittance dependency. This means that the

nature of remittance-receiving households in Kenya is accompanied by the income substitution effect whereby the household members have the motivation to reduce the number of working hours and continue relying on remittances as a non-labour income which is labour supply distortive in nature. Additionally, there is a higher reservation wage and reduced labour supply as labourers withdraw their labour force to continue receiving non-labour incomes.

The study, therefore, concludes that while international remittances may be beneficial at the household level, they should not be relied upon for addressing income inequality, especially in developing countries such as Kenya. This is because, in the near future, the worldwide labour market will demand more professional workers and technical workers, and remittances could make the situation worse instead of improving income inequality.

5.2.2 The impact of remittances on income inequality

The second objective had a goal of examining how remittances affect income inequality in Kenya. The counterfactual approach was used to address the objective whereby consumption was used as a proxy for household welfare. The instrumental variables two-stage least squares (IV/2SLS) estimations model was estimated on both the bottom quantile, representing the poor, and the top quantile, representing the rich. The estimation showed that the correlation between remittances and household consumption of those in the lower spending quantile is negative and significant, while for the top quantile, the relationship is positive and significant. Specifically, if remittances increased by Kenya Shillings 1, then per capita consumption of the poorest quantile is decreased by 262.3 per cent while that of the top quantile increases by 51.8 per cent.

This is explained by Lucas and Stark (1985) in their altruistic theory that inequality between the rich and the poor revolves around financing the cost of migration whereby they are quite high hence exceeding the financial possibilities for the low-income families hence negative. Additionally, the significant negative relationship is explained by the fact that migrants who originate from poor families are likely to borrow initial costs of their migration from relatives or borrow interest-earning loans which are repaid by the remittances.

The positive and significant effect of remittances on inequalities among the rich, as per the study findings, implies that migration tends to increase inter-household inequality since richer households are likely to secure remittances through inheritance given that resources are collectively owned hence financing migration may not be a problem. This, in effect, facilitates the financing of more family members to enable them to migrate. This study, therefore, concludes that the opportunity to receive remittances made to households tags along the prospects of reducing inequality in Kenya, as poor households may be limited to accessing migration benefits due to difficulty in financing the movement and accessing the information necessary for migration. Additionally, adjusting for the counterfactual effect top quantile, that is, richer households have more households receiving remittances and increasing remittances amounts, which suggests that remittances could potentially lead to skewing of income inequality across households.

5.3 Policy Recommendations

As per the study findings, remittances are crucial in reducing income inequality in Kenya. Poor households, however, may be limited to accessing migration benefits due to difficulty in financing the movement; hence, the study recommends policies to enable poor households to

send their migrants to developed countries. Such policies include providing more credit opportunities, enhancing education facilities to enable them to get skills required for international migration, making information regarding migration opportunities easily accessible to poor households, and strengthening the legal status of contracts among potential migrants and foreign employers.

5.4 Areas for further studies.

The findings of the research showed that the nature of remittance-receiving households is purely remittance dependency, meaning that receiving overseas remittances reduces labour force participation of the remaining household members. The policy effect of this conclusion lies in the determination of what the migrant households are doing instead of working and the details of the time they spend not working, which forms a basis for further studies.

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