ANALYSIS OF IMPACT OF REMITTANCE ON POVERTY AND INEQUALITY IN NIGERIA

A RESEARCH PROPOSAL SUBMITTED TO POVERTY AND ECONOMIC POLICY PMMA NETWORK

(REVISED VERSION)

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Abstract

In recent years, workers remittances have become a major source of external development finance. In fact, over the last decade, Nigeria is the single largest recipient of remittance in Sub-Saharan Africa as it receives between 30 percent and 60 percent of remittances to the region. Though official figures are not available, economists and financial analysts believe that remittance from Nigerians in various parts of the world now exceed US$1 billion annually, ranking second only to oil exports as a source of foreign exchange earnings. However, despite the ever increasing size of remittances, both internal and international, there has been little effort to analyze its effect on economic development especially on poverty in Nigeria. Thus, because of the poor understanding of the impact of remittance in Nigeria’s economic and national development, remittances are poorly managed. This study, therefore, aims to analyze the impact of remittances on poverty and inequality in Nigeria. The data from Nigerian National Living Standard Survey, 2004, will be used for the study. In order to measure the impact of remittance on poverty, Instrumental variable (IV) technique and propensity score matching technique will be used with expenditure per capita as the outcome indicator. Gini coefficient will be used to determine total inequality. Concentration curves and Lorenz curve will be used to determine progressivity of remittance. Decomposition of poverty due to remittance will be done using the cost of inequality approach. The cost of inequality will also be decomposed into VE and HI. Shapely approach will be used to decompose inequality into income components when one component is remittance.
INTRODUCTION

Background

Migration, which involves a relocation of residence of various duration and nature, assumed a phenomenal dimension in Nigeria in the past decades. This was accentuated by two decades of economic stagnation and macroeconomic instability, corruption and poor resource management. Most Nigerians, especially young people, consider migration as a panacea to economic problems. In recent years, there has been unprecedented rate of rural-urban migration and emigration into other countries of Africa, Europe and America. For example, due to migration and subsequent urban growth, Lagos, a city in Nigeria, which did not appear in the list of fifteen largest cities in 1950, occupied the fifteenth position in 1995 and is expected to jump to number three position in 2015 with over 24 million inhabitants (Todaro, 1997). As regards movement outside Nigeria, there has been a remarkable increase in emigration to Europe, North America, the Middle East and South Africa from 1980’s following economic downturn, introduction of liberalization measures and emergence of repressive military dictatorship (Adedokun, 2003). Thousands of professionals, especially scientists, academics, and those in the medical fields have emigrated, mainly to Western Europe, the United States and Persian Gulf States. At the same time, unskilled Nigerians with little education have gone abroad to work as street cleaners, security guards, taxi drivers, and factory hands. In southern Nigeria, for example, between 50 and 80 percent of households have at least one migrant member (Bah et al, 2003). Migration is considered essential to achieving success and young men who do not migrate or commute to town or abroad are often labeled as idle and may become object of ridicule.

These migrants often remit or send a sizeable portion of their increased earnings to families and acquaintances back home. In fact workers remittances have become a major source of external development finance. It is estimated that migrant remittance flows to developing countries now surpass official development aid receipts in many developing countries (Ratha, 2005). Migrants’ remittances are currently ranked as the second largest
source of external inflows to developing countries after foreign direct investment. For example, in 2001, official development finance transfers to developing countries were about US$57 billion (OECD, 2003); this compares with recorded global remittances of US$72.3 billion the same year (World Bank, 2003). Over the last decade, Nigeria is the single largest recipient of remittance in Sub-Saharan Africa (Maimbo and Ratha, 2005). Nigeria receives between 30 percent and 60 percent of remittance to the region (Orozco, 2003). Though official figures are not available, economists and financial analysts believe that remittance from Nigerians in various parts of the world now exceed US$1 billion annually, ranking second only to oil exports as a source of foreign exchange earnings. Nigeria was among the top 20 developing countries recipients of remittance in 2003 (Ratha, 2005). Estimate of internal remittance is not known. Some economists believe that inflows from abroad have been a key factor to the stability of Nigerian naira against other international currencies in the past two years.

**Problem Statement**

However, despite the ever increasing size of remittances, both internal and international, there has been little effort to analyze its effect on economic development especially on poverty in Nigeria. Adams, (2005) observes that little attention has been paid to examining the economic impact of these transfers on households in developing countries despite the ever increasing size of official international remittances. In fact, notwithstanding that remittance has been implicated as a vital source of income with crucial income smoothening effect and contribution to improved standard of living, its effect in Nigeria is not known. Thus because of the poor understanding of the impact of remittance in Nigeria’s economic and national development, remittances are poorly managed. Nightingale (2003) observes that in spite of the recognized advantages of a well articulated remittance management regime to aid growth and development by providing much needed foreign exchange, and as a source of liquidity and a palliative for its balance of payment deficit, Nigeria does not put remittance of migrant workers to their best use. Thus the key policy question is: how do remittances affect poverty and inequality in Nigeria? Specifically, what is the difference in poverty level as measured by
depth and severity of poverty between households that receive remittance (internal and international) and those who do not? Do the poor benefit from remittance more than the non poor? What is the frequency of reception of remittance? What is the relative importance of in-country, inter-regional and intra-regional remittances? Is there a level of inequality between remittance receiving and non-receiving households? What is the proportion of remittance to rural as opposed to urban households? Is remittance progressive? What is the difference in poverty between households that do not receive remittance and those who receive cash and non cash remittances?

**Research Objectives**

The main objective of this study is to ascertain the impact of international (inter and intra-regional) and internal remittances on poverty and inequality in Nigeria. Specifically, the study seeks to;

1. ascertain the socioeconomic differences, including gender perspectives, between households that receive internal and international remittances;
2. analyze the impact of remittance on poverty using expenditure per capita as outcome indicator;
3. ascertain the level of inequality between remittance receiving and non-receiving households;
4. study the progressivity of remittances
5. decompose the variation in inequality arising from remittances into vertical, horizontal and re-ranking effects;
6. decompose total inequality into income components when one the components is remittance;
7. decompose poverty indices into income components when one of these components is remittance;
Justification/Scientific Contribution and Policy Relevance

Firstly, this study is justified by the tremendous level of poverty in Nigeria. Official statistics show that in 1980, the national average of poverty incidence was 28.1 percent of the population. This grew to 46.3 per cent in 1985, 65.6 per cent in 1996 and 70.0 percent in 1999 (FOS, 1999; World Bank, 1999). United Nations, (2003), report show that poverty is still deepening with over 70.2% of the people earning less than US1$ a day. Hence it is imperative to study measures to help reduce poverty in Nigeria.

Secondly, although some recent studies have been carried out on the impact of remittance on poverty, for example, Adams and Page (2004); Adams, (2004); Taylor, Mora and Adams, (2005), Yang and Martinez, (2005), most of these studies focused on Central America and Caribbean countries and besides some gaps still exist. To our knowledge, a study of this nature has not been carried out in Nigeria. Although some of the studies used large and nationally representative samples, the data used have limited information on remittances, for example, the study on remittance and poverty in Guatemala was based on a data set from a survey that asked three questions on remittance (Adams, 2004). The studies, also, did not account for remittances which are meant to be paid back and frequency of remittance neither did they account for intra and inter regional remittances. It is important to note that in Sub-Saharan Africa, migrants have tended to stay on the continent, moving intra-regionally or domestically (Sanda and Maimbo, 2005) Thus accounting for this in any remittance study in Sub-Saharan Africa is worthwhile. Hence this study intends to fill these gaps. Furthermore, the study is justified by the fact that it will account for other forms of remittance, namely, food and other non-food items. Chimhowu, Pisse and Pinder (2005) observes that any study on the impact of remittance on poverty requires attention to informal and non-monetary forms of transfer that are often neglected, for example, food, clothing, medicine, gifts, dowries, tools and equipment.

In addition, the financial infrastructure for remittance in Nigeria is still limited. Thus, a lot of remittances go through informal channels and discourage their use for savings and
investment. Nigeria has a laissez-faire emigration policy and as such, no structures or measures hinder or facilitate the movement of citizens outside the country beyond normal immigration requirements and therefore no initiatives for pre-departure training and management of remittance. Therefore, a study on the impact of remittance will help justify the need for policy initiatives to develop financial structures and infrastructure for remittance and for a credible immigration policy.

Moreover, this study will facilitate the initiation and implementation of antipoverty policies. Based on discussion with policy makers in the National Planning Commission and the Central Bank of Nigeria, if it is found out that remittance can help reduce poverty and inequality, it will enhance designing of policies that will facilitate providing of less costly and hassle-free means of transmission of remittance thus encouraging remittance and mainstreaming remittance into national development. The government will further provide better strategies and environment for private sector participation in investment in Nigeria to encourage remitters to invest their money especially in small/medium scale but high productivity activities. This will then enhance employment generation and growth, reduce the dual nature of the economy and thus enhance Nigeria’s competitiveness. Generally, a positive effect of remittance will equally encourage policy makers to initiate policies to improve the business environment (trade facilitation, business registration and licensing and contract enforcement) in Nigeria so as to encourage Nigerians outside Nigeria to do business in Nigeria and possibly recover some of the losses due to brain drain. Poor access to finance is among the constraints to Nigeria’s economic growth and competitiveness and hence poverty reduction. Policies to enhance remittance, which may come up due to this study, will help facilitate access to long term finance made available by remitters especially through their investment in the capital market. These initiatives can be incorporated in the National Economic Empowerment and Development Strategy II (NEEDS II) document which the process of development has just started.

Finally, this study will facilitate the designing of antipoverty programme, for example, if remittance is found to increase inequality, policy measures can be designed to enhance the transfer of resources to non-remittance receiving households, for example, by taxing
remittance income. The findings as regards internal remittance will guide government on decisions to support or discourage internal migration. This could be by focusing on rural area development.

LITERATURE REVIEW

Conceptual Overview of Remittance

Remittances are financial resource flows arising from the cross border movement of nationals of a country (Kapur, 2004). Remittances come in form of money, assets or informal or non-monetary forms. Non-monetary forms may include clothing, medicine, gifts, dowries, tools and equipment. In recent years, remittance flows rank behind foreign direct investment (FDI) as source of external funding for developing countries. Global flows of migrant worker remittances were estimated at US$182 billion in 2004, up 5.7 percent from their level in 2003 and 34.5 per cent compared to 2001 (World Bank, 2004). Remittances to Developing countries from overseas resident and nonresident workers exceeded US$126 billion or 1.8 per cent of GDP in 2004 (Ratha, 2005). Although remittance to Sub-Saharan Africa is low, 5 per cent of global estimates in 2003, Nigeria remains the single largest recipient in Sub-Saharan Africa. International remittances enter Nigeria through formal and informal sources. The Western Union Money Transfer mechanism is one of the major ways through which remittances enter Nigeria. Nigerians are also allowed to operate foreign currency dominated domiciliary account in Nigeria and remittances are received in Nigeria through this means. Informal sources include relatives and town unions and individuals entering Nigeria from their domicile foreign countries among others.

Motivation to remit, as reflected by some schools of thought, includes risk sharing, altruistic or livelihood and risk sharing with altruism. The risk-sharing school maintains that remittances are installments for individual risk management (Stark, 1991; Stark and Lucas, 1988). The altruism or livelihood school considers remittance to be an obligation to the household and remittances are sent out of affection and responsibility towards the
family (Chimhowu et al, 2003). The evidence from U.S.-Nigeria migration study (Osili, 2006) suggests that transfers to origin family are motivated by altruistic considerations, with poorer origin-family members in Nigeria receiving larger transfers. The migrant is simply part of a spatially extended household that is reducing the risk of impoverishment by diversifying across a number of activities (de Haan, 1998; Agrawal and Horowitz, 2002). The third school sees both altruism and self-interest as playing a role in the motivation to migrate and remit (Ballard, 2001; Clarke and Drinkwater, 2001).

On the impact of remittance, two dominant perspectives are emerging in literature. The neo-liberal-functionalist persuasion suggests that remittances are beneficial at all levels particularly the individual, household, community and national level (Orozco, 2002; Skeldon, 2002; Ratha, 2003). Remittances are seen to play a crucial role in developing local level capital markets and productive infrastructure as well as increasing the effective demand for local goods and services. On the other hand, those looking at remittances from historical-structuralist perspective consider remittances to be responsible for creating dependant relations between the sending and the receiving countries (Portes and Borocz, 1989). Remittances are seen to cause inequality in households and macro-economic distortion especially in countries with low GDP. Generally, it remains controversial whether remittances have an overall positive or negative impact on a receiving country’s economy and its migrant-producing communities (Page and Plaza, 2005). However, whilst the overall poverty effect as seen from literature remains ambiguous, the overwhelming results from empirical studies show that, apart from possible increase in social inequality and social differentiation, remittances make a powerful contribution to reducing poverty or vulnerability in the majority of households and communities (Chimhowu et al, 2003). However, this remains to be investigated in Nigeria.

**Nigeria Poverty Profile and Causes of Poverty**

Nigeria has been characterized as a country of poverty amid plenty. Thus, despite the country oil wealth, poverty is widespread and Nigerian basic social indication her among the 20 poorest countries in the world. Although poverty has existed in Nigeria especially
after the civil was in 1970, poverty however became prominent in 1980 with the collapse of world oil prices and a sharp decline in petroleum output. Data from the Federal office of statistics shows that the incidence of poverty increased sharply between 1980 and 1985 and between 1992 and 1996, however there was a decrease in poverty between 1985 and 1992. United Nation, (2003) reports show that poverty is still deepening with over 70.2% of the people earning less than US1$ a day.

Inadequate economic growth is the main cause of poverty in Nigeria (National Planning Commission (NPC), 2004). Nigeria economy has a very narrow and weak base, depending mostly or exportation of petroleum crude oil as a major source of income; the agricultural base of the economy had been frustrated and marginalized (Oyeduntan, 2003). High and growing unemployment has also exacerbated the level of poverty in Nigeria. Other factors that have contributed to the level and evolution of poverty in Nigeria include problems in the productive sector, widening income inequality, weak governance, social conflict and gender, intersectoral and environmental issues (NPC, 2004). Poverty in especially in the urban area has been made severe by low labour absorption capacity of the nonagricultural sector, especially manufacturing, which is as a result of limited growth of investment and technological innovation. Weak governance which is manifested in corruption, rent seeking, inappropriate planning and neglect of the private sector have contributed immensely to corruption in Nigeria. Furthermore, empirical evidence shows that poverty and environmental degradation are inextricably linked in Nigeria, because 75 percent of rural people depend on natural resources for their livelihood, hence environmental degradation reduces opportunities for poor people to earn sustainable income (NPC, 2004). Globalization equally worsens the situation of poverty as the basis of challenge and competitions are lacking thus this has manifested in several ways. For instance, the debt burden increased from $14.28 billion in 1980 to about $32 billion in 2000 (Oyeduntan, 2003).
Empirical studies on Remittance and Poverty

Stark (1991) and Adams (1991) pioneered the effort to assemble household data that could shed light on the impact of remittances on welfare. However, their findings were limited by small sample size. Some recent studies have been carried out to estimate the impact of remittances on welfare. Paulson and Miler (2000) found that households who more insured by remittances shift their portfolios towards riskier investments. Adams and Page (2003) in a study of poverty, migration and remittances for 74 low and middle-income developing countries found that both international migration (the share of a country’s population living abroad) and international remittances (the share of remittances in country GDP) have a strong, statistical impact on reducing poverty in the developing world. On average, a 10 percent increase in the share of international migrants in a country’s population will lead to a 1.6 percent decline in the poverty headcount. Adams and Page (2004) used the result of household surveys in 71 developing countries to analyze the impact of international migration and remittances on poverty. They found out that a 10 per cent increase in per capita official international remittances in a developing country will lead to a 3.5 per cent decline in share of people living on less than $1/person/day in that country. Adams (2004) also found that remittances reduce the severity of poverty in Guatemala. He also found out that Guatemalan families who report remittance tend to spend a lower share of total income on food and other non-durable goods, and more on durable goods, housing education and health. Taylor, Mora and Adams (2005), in a study in rural Mexico, found that international remittances account for a sizeable proportion of total per capita household income in rural Mexico and that international remittances reduce both the level and depth of poverty. Yang and Martinez (2005) in a study in Philippines found that remittance lead to reduction in poverty migrants’ origin households. Fajnzylber and Humberto Lopez (2007) in their study on impact of remittance in Latin America found out that nine out of eleven countries in Latin America and Caribbean exhibit higher Gini coefficients for non-remittance income, suggesting that if remittances were exogenously eliminated, inequality would increase. Also, their comparison of poverty headcounts before and after excluding remittance from the total income of recipients do suggest large reductions in
poverty levels, especially in those countries where migrants tend to come from the lower quintiles of income distribution. In addition, they found out that the failure to correct for the reduction in income associated with the absence of migrants from their households may lead to grossly overestimating the poverty-reducing effect of remittances. They observed that the effect may be responsive to the use of different econometric methodologies. Moreover, they found out that children from families receiving remittance are more likely to remain in school.

**METHODOLOGY**

**Analytical Framework**

In order to ascertain the impact migrant remittances on household welfare or poverty profile, a poverty function is specified. The poverty profile function to be estimated is specified as:

\[ \log(u_i) = \alpha + \sum \beta_j X_{ij} + \varepsilon_i \]

Where \( \varepsilon_i \) is the error term which is assumed to be independent and normally distributed, \( u_i \) is real per capita expenditure and \( X_s \) are a vector of explanatory variables including migrant remittances and economic shocks (as measured by the food and non-food prices).

Estimating the impact of remittance with this function implicitly make the unrealistic assumption that remittances can be treated as exogenous transfers by migrants. The problem is that in many cases migration also entails potential losses of income associated with the migrants’ absence from their families and communities. In other words, remittances are not exogenous transfers but rather they substitute for the home earnings that migrants would have had if they had not decided to leave their countries to work abroad. To consider these effects one needs to estimate the value that household income would have had if migrants had stayed in their households.
Hence to capture the impact of remittance on poverty, one of the preferred methodologies is to first determine a counterfactual situation without remittance. The income of households excluding remittance situation if all migrants would have stayed and worked at home would be, firstly, determined. This will be done by estimating the per capita income of all households excluding remittance. The predicted income equation would then be used as a basis for evaluating the impact of remittance on poverty when internal, intra-regional and inter-regional remittances are included in per capita household incomes and also for households that receive cash and non-cash remittances. The impact of remittance on poverty as measured by its effect on debt and severity of poverty will then be determined.

To establish the counterfactual situation, that is, what would the incomes (expenditure) of households have been in excluding remittance situation if all migrants would have stayed and worked at home, per capita household expenditure will be estimated for excluding remittance situation following the steps thus:

1. the parameters predicting per capita household expenditure (excluding remittance) will be estimated for households which do not receive remittance;
2. the parameters will be applied to households which receive internal remittance from Nigeria;
3. the parameters will be applied to households which receive intra-regional remittance; and
4. the parameters will be applied to households which receive inter-regional remittances.

With this, per capita household expenditure in the excluding remittance situation can be predicted for the four groups of households, namely, those receiving internal remittance, those receiving intra-regional remittance and those receiving inter-regional remittances. The model for predicting per capita household expenditure can be specified using a linear function in line with suggestions in literature thus:

\[ y_i = X_i \alpha + \varepsilon_i \]

where \( y_i \) is the per capita expenditure of household \( i \), \( X_i \) is a \( 1 \times k \) vector of household characteristics, \( \alpha \) is a \( k \times 1 \) vector of coefficients, and \( \varepsilon_i \) is a random disturbance term.
The variables that will be included in the estimation will be variables that exogenous to the production of household income (expenditure). Some previous studies used household, education, housing, regional and ethnic variables.

After predicting household expenditure for the four groups of households in the excluding remittance situation, household expenditure in the including remittance situation could be calculated for those households receiving internal and international remittances using the following two steps:

1. for those households receiving internal or international remittances, setting to zero the predicted income contribution of the migrant based on the estimation; and
2. adding-in the actual amounts of internal and international remittances received by households receiving remittances.

After predicting per capita household expenditure in the excluding and including remittances for the two to groups of households, the impact of remittance on poverty can then be examined.

However, the use of predicted income or expenditure equation is been criticized because of the following reasons:

- The predicted error at the level of the household can exceed the level of the remittances. This casts doubt on predicted expenditure without remittances.
- The implicit hypothesis of the approach, which is estimating the expenditures of the counterfactual group, is in similarity between the group that receives remittances and the other that does not. For example, suppose that a high proportion of those households that do not receive remittances are poor. In that case, the bias is evident and expenditures for the counterfactual group are underestimated.

A method that can be used to overcome these criticisms and capture the impact of remittance on poverty is propensity score matching technique. Propensity score matching in its simplest form involves predicting the probability of treatment on the basis of observed covariates for both the treatment and the control groups samples (Rawlings and Schardy, 2002). In propensity score matching, one picks an ideal comparison group from
a larger survey and then matches the comparison group to the treatment group on the basis of set of observed characteristics on the predicted probability of participation given observed characteristics ("propensity score") (Ravallion, 2001). The observed characteristics are those used in selecting individuals but not affected by programme participation. For example, for estimating the impact of remittance on poverty, two groups are identified, those with remittance (denoted as Ri =1 for household i and those without (Ri = 0). Those with remittance (treated) are matched to those without (control group) on the basis of the propensity score: (probability of receiving remittance given observed characteristics)

\[ p(x_i) = \text{prob}(R_i = 1 | x_i) \quad (0 < p(x_i) < 1) \]

where xi is a vector of pre-remittance control variables. If the Ri’s are independent over all i, and the outcomes are independent of remittance transfers given xi then outcomes are also independent of remittances given p(xi), just as they would be if remittances were transferred randomly.

Propensity score matching is a better method of dealing with differences in observables. However, a few tests that have been done suggest that with good data, propensity score matching can greatly reduce the overall bias and outperforms regression-based methods (Ravallion, 2001).

The estimation procedure/steps in propensity score matching for with and without remittance will include:

- Pooling of two groups of individuals, that is the treatment and comparison group of those who receive remittance and those who do not receive remittance. After the pooling, a logit model of remittance receiving and non-remittance receiving as a function of some socio-economic variables will be estimated. The variables to be selected are those that were not affected by receiving remittance. The socio-economic variables will include individual, household, and community variables.
Some of the socio-economic variables to be included are age, household size, number of years of schooling, gender. The equation is put thus:

\[ P_i = \log \frac{P_i}{1-P_i} = \log O_i = a_i + b_1 \text{Age} + b_2 \text{House size} + b_3 \text{School} + b_4 \text{Gender} \]

- From the logit regression, a predicted value of the probability of remittance receiving will be created. These are propensity scores. Each individual will have a propensity score. Non-remittance households with very low propensity scores that are outside the range found for participants will be excluded.

- For each remittance receiving household, a non-remittance receiving household that has the closest propensity score, as measured by the absolute difference in scores, referred to as nearest neighbor will be obtained. For more precise estimate, the nearest five neighbors will be used.

- The mean value of the outcome indicators (per capita expenditures, and income share spent on food) for the nearest five neighbors will be calculated. The difference between the mean and actual value for the remittance receiving households (beneficiaries) is the estimate of the gain due to remittance.

- The mean of individual gains is calculated to obtain the average overall gain.

The difference in poverty between remittance receiving households and non remittance receiving households as measured by its effect on dept and severity of poverty will then be determined.

However, the propensity score I proposed was also criticized because if you match people on their relevant observable characteristics, you have to include income as one of those characteristics, because income is one of the determinants of remittances. But if you match people based on their income, incomes of your treatment and control groups will be almost the same, by construction. So one will not see any difference in poverty in the two groups and will conclude that remittance has no impact. On the other hand if you
leave income out of propensity score equation, then there is an obvious bias in the estimated difference because an observable determinant of the different groups has not been controlled. Also it makes little sense to reduce the whole distribution of remittances to 0 and 1 dummy.

Thus the use of instrumental variables is recommended. Instrumental variables (IV) are variables that matter to remittance but not to the poverty given remittance. Instrumental variable are correlated with the probability of treatment but uncorrelated with unobserved determinant of outcomes. IVs estimates are predicated entirely on the validity of the instrument and unobserved determinant of treatment effects can result in serious biases (Ravallion, 2001). The instrumental variables are first used to predict remittance, then one sees how the poverty varies with the predicted value conditional on other characteristics. Therefore, there will be two stage equations, the first predicting remittance and the second predicting poverty given remittance. The residual in the first equation predicting remittance will be included in the second equation thus treating remittance as exogenous.

The major problem with the use of instrumental variable is that it is difficult to obtain a good instrument from a cross sectional data set. Normally, the validity of the exclusion restriction required by IVE is questionable with only a single cross-sectional data set; while one can imagine many variables that are correlated with remittance, such as household characteristics, community characteristics, geographic characteristics of an area etc. , it is questionable on a priori grounds that those variables are uncorrelated with poverty given remittance.

The difference in poverty between remittance receiving households and non remittance receiving households as measured by its effect on dept and severity of poverty could be determined using the poverty indexes proposed by Foster, Greer and Thorbecke (FGT), (1984). FGT proposed a family of poverty indexes, based on a single formula capable of incorporating any degree of concern about poverty through the “poverty aversion”
parameter, $\alpha$. This is called P-alpha measure of poverty or the poverty gap index.

$$P = \frac{1}{N} \sum_{i=1}^{q} \left(\frac{z - y_i}{z}\right)^{\alpha}$$

where $z$ is the poverty line, $q$ is the number of households/persons below the line, $N$ is the income of the $i^{th}$ household, and $\alpha$ is the FGT parameter, which takes the value of 0, 1 and 2, depending on the degree of concern about poverty. The quantity in parenthesis is the proportionate shortfall of income below the line. By increasing the value of $\alpha$, the “aversion” to poverty as measured by the index is increased.

For example, where there is no aversion to poverty, $\alpha = 0$, the index is simply

$$p_0 = \frac{1}{N} q = \frac{q}{N} = H = \text{Head-count index (ratio of number of poor to the total population)}.$$

If $\alpha$ is $= 1$, the index becomes, $p_1 = \frac{1}{N} \sum_{i=1}^{q} \left(\frac{z - y_i}{z}\right) = H1$ which is the head-count index multiplied by the income gap between the average poor person and the line. The index measures the depth of poverty; it is also referred to as “income gap” or “poverty gap” measure. If $\alpha$ is $= 2$, then $P2$ is the income gap squared index and it captures the severity of poverty. $p_2 = \frac{1}{N} \sum_{i=1}^{q} \left(\frac{z - y_i}{z}\right)^{2}$. A known poverty line e.g. the poverty line derived in the Nigerian National Living Standard Survey could be used.

The decomposition of poverty due to remittance can be done based on the cost of inequality that it causes. The poverty reduction effectiveness of a policy is a function of the change in the cost of inequality that it causes; the change in the cost of inequality can be decomposed into vertical equity (VE) and horizontal inequality (HI) components (Bibi and Duclos, 2007). Thus the cost of inequality caused by remittance can be decomposed into VE and HI. A measure of the cost of inequality in the distribution of poverty gaps, according to Sami and Duclos (2007) is given by:

$$C_{\alpha}(g(z)) = \Gamma_{\alpha}(g(z)) - \Gamma_{\alpha}(g(z)) \text{ for } \alpha \geq 1$$

where $\Gamma_{\alpha}(g(z))$ is average poverty gap and $\Gamma_{\alpha}(g(z))$ is equally distributed equivalent (EDE) poverty gap (the poverty gap which is assigned equally to all individuals, would produce the same poverty measure as that
generated by actual distribution of poverty gaps. The cost of inequality becomes zero when the poverty gaps are equally distributed across the total population.

As already indicated the cost of inequality can be decomposed into VE and HI components. Following Sami and Duclos (2007), for any fixed \( y_h \) in remittance \( y \), let \( \Omega(y_h) \) denote the group of persons having \( y_h \) before remittance: this is the group of \( n_h \) equals located at income \( y_h \). The local presence of HI at \( y_h \) generates post-remittance inequality within the members of \( \Omega(y_h) \). Let \( \gamma'(y_h, z) \) be the post-remittance EDE poverty gap at \( y_h \), namely, 
\[
\gamma'(y_h, z) = \left( \frac{1}{n_h} \sum_{i \in \Omega(y_h)} g_i^z(z) \right)^{1/\beta}.
\]
The overall poverty gap is given by 
\[
\Gamma'(z) = n^{-1} \sum_{h=1}^{N} n_h \gamma'(y_h, z).
\]
Hence using the cost of inequality approach, a natural measure of the local cost of HI (the local cost of inequality introduced by local HI) at \( y_h \) is then given by:
\[
\eta'(y_h, z) = \gamma'(y_h, z) - \gamma'(y, z) \geq 0
\]
The EDE gap \( \gamma'(y_h, z) \) can be interpreted as the HI-adjusted post-remittance poverty gap. Aggregating \( \eta'(y_h, z) \) across the \( y_h \) using the population shares, an aggregate index of HI is obtained as:
\[
H'(z) = n^{-1} \sum_{h=1}^{N} n_h \eta'(y_h, z)
\]
Using the data available to estimate the classical HI through this means is problematic as it requires that the data be drawn from a continuous joint population distribution of pre-remittance and post remittance incomes. Hence the estimation could be done through a non parametric estimation of joint distribution of pre-remittance and post remittance incomes using kernel density estimation as was done by Duclos and Lambert (2000).

Furthermore in estimating the VE, focusing on the distribution of local EDE poverty gaps \( \gamma'(y_h, z) \) (a good indicator of individual welfare in the presence of horizontal inequality and risk), the cost of inequality with \( \gamma'(z) \) is then given by:
The VE of remittance is measured by the difference between the cost and initial cost of inequality thus: \( V_{\alpha,\beta}^i(z) = C_\alpha(g(z)) - C_\alpha(y_{\beta}^i(z)) \)

The Larger the value of \( V_{\alpha,\beta}^i(z) \) the more vertically equitable is remittance i.

Also the DJA framework can be used to decompose the variation in inequality arising from remittances into vertical, horizontal and re-ranking effects. It was long ago recognized that it is impossible to decompose the Gini index into vertical and horizontal components without a “hard to explain” residual (Lambert and Aronson, 1993). However, since the seminal work of Aronson, Johnson and Lambert (1994) (AJL) in this area, a number of methods have been developed to enable the decomposition of the Gini inequality index into vertical equity (VE) component, horizontal equity (H) component and reranking effects (R). Other frameworks for the decomposition of the Gini Index that have been developed since Aronson et al. (1994) include Auerbach and Hassett (1999), Duclos, Jalbert and Araar (2003), (DJA) and Araar (2006). On account of its conceptual clarity and practical implementation advantages\(^1\) over the methods (Ichoku, 2006), this study will use the DJA decomposition framework to analyze the extent of VE, H and R in income distribution induced by remittances.

Let \( X \) and \( N \) represent pre- and post-remittance incomes respectively. The general form of the DJA framework is specified as (Duclos and Araar, 2006):

\[
\Delta I = I_X - I_N = I_X - I_N^E - (I_N^P - I_N^E) - (I_N - I_N^P)
\]

\[
\text{RE} \quad \text{V} \quad H \geq 0 \quad R \geq 0 \quad (3)
\]

Where, \( V \) is the total redistributive effect obtained as the difference between the pre-remittance income inequality \( I_X \) and post-remittance income inequality \( I_N \). Under the DJA framework, VE is computed as \( I_X^E - I_N^E \). Where: \( I_N^E = E(N \mid X) \). In practice, the expected income at a given pre-remittance income level is computed using the non-

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\(^1\) For example, the DJA decomposition framework can be implemented using the DAD software.
parametric kernel regression. VE may be interpreted simply as the difference between the Gini coefficient of $X$ and the coefficient of concentration of the expected $N$ when the ranking variable is $X$.

Horizontal inequity/inequality $H$ is the difference between the expected net income utility $I^p_N$ and expected net income $I^E_N$. This is difference between the coefficient of concentration of $N$ when the ranking variable is $X$, and the index of concentration of expected $N$ when the ranking variable is $X$. The re-ranking effect is the difference between $N$ and the expected net income utility $I^p_N$.

The effect of remittance on inequality could also be measured using Gini coefficient. Concentration curves will also be drawn for different remittance situations, namely, excluding remittance, including internal remittance, including intra-regional remittance and including inter-regional remittance. The concentration curves and Lorenz curve will also be used to study the progressivity of remittance. According to Araar and Duclos, (2006), in discrete from, one can define the concentration curve at percentile $p$ as follows

$$C_N(p = i/n) = \frac{\sum_{j=1}^{i} R_j}{\sum_{j=1}^{n} R_j}$$

- Remittance transfer is progressive when the concentration curve of remittance transfer is above the Lorenz curve. When the concentration curve of remittance transfer is above the Lorenz curve, the poor receive relatively more remittance than the non poor- Remittance is progressive
- The TR approach (Tax redistribution approach) will be applied for comparison, thus: a remittance is TR-progressive if $C_{R1}(p) > L_X(p)$ for all $p \in [0,1]$.
- A form of remittance (R1-internal) is more TR progressive than remittance R2 (international) if $C_{R1}(p) > C_{R2}(p)$ for all $p \in [0,1]$.

Progressivity indices could be determined using the Kakwani index of TR progressivity ($JT(\rho = 2)$). This is computed as difference between S-Gini indices of inequality and
concentration: \( IT(\rho) = IC_R(\rho) - I_X(\rho) \). When gross incomes are ranked in ascending order, the Gini index takes the following form: 

\[ I_X = 1 - \sum w_i x_i, \quad \text{Where } w_i = \frac{2(n-i)+1}{n^2} \]

and \( x_i \) is the income share of household \( i \). The concentration index of remittance \( R \) is defined as follows: 

\[ IC_R = 1 - \sum w_i R_i \] where \( R_i \) is the remittance receipt of household \( i \).

Decomposing inequality into income components when one component is remittance can be achieved using The Shapley value. With Shapley value, contribution of a component ‘c’ to total inequality is its expected contribution to inequality reduction when it is added randomly to anyone of the various subsets of components that one can choose from the set of all components. With two components, this gives:

\[
X_{(2)} = \frac{1}{2}\{I(X_{(1)}, X_{(2)}) - I(\mu X_{(1)}, X_{(2)}) + I(X_{(1)}, \mu X_{(2)})\} \quad \text{--- Sharpley contribution of C1}
\]

\[
0.5\{I(X_{(1)}, X_{(2)}) - I(X_{(1)}, \mu X_{(2)}) + I(\mu X_{(1)}, X_{(2)})\} \quad \text{--- Sharpley contribution of C2}
\]

**Estimation Procedure**

In order to analyze the socioeconomic difference between households in different remittance receiving situations (internal, intra-regional and inter-regional), descriptive and inferential statistics, namely, means, t-test statistics will be used. Remittance, generally, will be measured as amount remitted by a migrant member of household less the amount to be repaid.

In estimating the impact of remittance on poverty, two approaches will be used, namely, instrumental variable technique and propensity score matching technique. The two approaches are used to make up for the lapses and difficulty in estimating poverty due to remittances and then to compare findings. The propensity score matching technique will be estimated as outlined in the analytical framework with expenditure per capita as the outcome indicator. Propensity score matching does not require a parametric model.
linking intervention (say remittance) to outcomes and thus allows for estimation of mean impacts including impacts conditional on income (Jalan and Ravallion, 2003).

In carrying out the instrumental variable technique, two decisions are to be instrumented: how much money to remit and whether to migrate or not. Since the data on migrants are not available, variables covering the two decisions will be obtained from the household data. Based on this, the amount to remit will be covered by the source of remittance whether internal, international (Africa) and international (elsewhere). It is expected that source of remittance will determine the amount of remittance since the economic situation in the source region/country differs. Higher amount of remittance will come from areas with good economic condition e.g. Europe and America than with areas with poor economic condition e.g. Africa. However, the source of remittance will not have effect on poverty given remittance. The second decision to be instrumented, that is whether to migrate or not will be done using a variable, household with a migrant and that without a migrant. Some households that receive remittance do not have a member that migrated. It is expected that having a household migrant member will influence the amount of remittance but will not influence poverty given remittance.

Thus as indicated in the analytical framework on the use of IV, two stage equations will be used. The first will estimate remittance and the second will estimate poverty given remittance. In the second equation, the residual from the first equation will be included to serve as the remittance variable. The equations are presented thus:

\[
\text{Log (Ri)} = \alpha + \beta_1 X_1 + \beta_2 X_2 + u_i \quad \text{- - - - equation 1}
\]

\[
\text{Log (Ui)} = \alpha + \sum \beta_j X_{ij} + \varepsilon_i \quad \text{- - - - equation 2}
\]

The \( R \) in equation (1) represents the amount remitted; \( X_1 \) and \( X_2 \) are the instruments, namely: source of remittance and migrant or non-migrant household member; \( u_i \) is the residual. In equation (2) \( \varepsilon_i \) is the error term which is assumed to be independent and normally distributed, \( U_i \) is real per capita expenditure and \( Xs \) are a vector of explanatory variables including the residual from the first equation representing migrant remittances.
It is important to emphasize that in this study, per capita consumption expenditure rather than income data will be used as outcome indicator because of the following facts: firstly, poverty economists prefer to use expenditure rather than income data to identify poverty since expenditure provide a more accurate measure of an individual’s welfare over time; secondly, income data is prone to measurement error especially underreporting of income which is prevalent in Nigeria; and thirdly, the fact that the poverty line to be used in the study is based on expenditure data.

Decomposition of poverty due to remittance will be done using the cost of inequality approach as outlined in the analytical framework. The cost of inequality will also be decomposed into VE and HI. The concentration curves and Lorenz curves, as outlined in the analytical framework, will be used to study progressivity of remittance. Shapely approach will be used to decompose inequality into income components when one component is remittance.

The proposed estimation procedures will be carried out using STATA and DAD softwares.

**Data for the Study**

The data obtained from the Nigerian National Living Standard Survey (NNLSS) conducted in 2004 will be used for the study. In the NNLSS data was collected on some indicators which include demography, education, health, employment and time use, migration, housing, social capital and community participation, agriculture, household expenditure, non-farm enterprise, credit, assets and saving, income transfer and household income schedule. In the NNLSS a two stage stratified sample design which include a cluster of housing units called Enumeration Area (EA) and then the housing unit was used for data collection. One hundred and twenty (120EAs) were selected for each of the 36 states while 60 EAs were selected for the Federal Capital Territory. Ten EAs with five housing units were studied per month. This implied that fifty (50) housing units in a state were canvassed for in a month. The study lasted for twelve months.
Some questions on remittance were asked. These include, has this household received or
collected money or goods from absent member? During the last 12 months, has this
household received or collected money or goods from any other individual? List each
persons name from whom household received money or goods? Id code if person is an
absent member of the household? If not a household member, relationship to the
household head and sex? Where these remittances received on a regular basis? Will you
have to repay these? What was the total amount of cash this household received from this
individual during the past 12 months? What was the total value of food received from this
individual during the last 12 months? What was the value of other goods (non-food
items) received from this individual during the last 12 months? Where does this
individual live Lagos, etc., Abroad (Africa or other)? Source of remittance in terms of
agency, formal or informal and use of remittance income was not covered.

### Detailed List of Variables and Labels in Data as Regards Remittances

<table>
<thead>
<tr>
<th>S/No</th>
<th>Questions (as in questionnaire)</th>
<th>Labels (as in data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is there any member of household who lives away from here</td>
<td>s13aq1</td>
</tr>
<tr>
<td>2</td>
<td>During the past 12 months, has this household received or collected money or goods from (name of absent member of household)</td>
<td>s13a2q1</td>
</tr>
<tr>
<td>3</td>
<td>During the past 12 months, has this household received or collected money from any other individual</td>
<td>s13a2q2</td>
</tr>
<tr>
<td>4</td>
<td>List each persons name from whom household received money or goods.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>ID code of person is an absent member of household</td>
<td>S13a2q4</td>
</tr>
<tr>
<td>6</td>
<td>If not a household member, relationship to the head of household</td>
<td>S13a2q5</td>
</tr>
<tr>
<td>7</td>
<td>If not a household member, sex</td>
<td>S13a2q6</td>
</tr>
<tr>
<td>8</td>
<td>Were these remittances received on a regular basis</td>
<td>S13a2q7</td>
</tr>
<tr>
<td>9</td>
<td>Will you have to repay these</td>
<td>S13a2q8</td>
</tr>
<tr>
<td>10</td>
<td>What was the total amount of cash this household received from this individual during the past 12 months</td>
<td>S13a2q9</td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>Code</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>11</td>
<td>What was the total value of food received from this individual during the past 12 months</td>
<td>S13a2q10</td>
</tr>
<tr>
<td>12</td>
<td>What was the value of other goods (non-food items) received from this individual during the last 12 months</td>
<td>S13a2q11</td>
</tr>
<tr>
<td>13</td>
<td>Where does this individual live</td>
<td>S13a2q12</td>
</tr>
</tbody>
</table>

Other variables in the data are on characteristics of households including household listing, education, income sources, expenditure, employment, assets, non-farm revenue sources, farm revenues sources, non-farm enterprises etc. as contained in most national living standard surveys. The data does not contain information on the characteristics of migrant household members. This data is equally not required in the analysis as shown in the methodology. Most previous studies on the impact of remittances on poverty did not use data containing migrant characteristics. I found out from the data that out of 1486 households that indicated that they received remittances, 4.1% were international while the rest were internal suggesting that households were skeptical at reporting remittances.
REFERENCES


Duclos, J. Y., Jalbert, V. and Araar, A. (2003), 'Classical horizontal inequity and reranking: an integrating approach' CIRPEE Working paper 03-06, University of Laval, Canada


DISSEMINATION OF FINDINGS

The findings from this study will be disseminated through workshops, policy briefs, academic conferences, and publication in scholarly journals and through already established contact with the National Planning Commission and the Central Bank of Nigeria. Before the study is started, a mini stakeholders workshop will be organized to intimate policy makers about the study and to seek their input. This will help ensure that the policy makers are carried along during the project and will equally facilitate their acceptance of the findings. After the study, a dissemination workshop will be organized to communicate the findings of the study to various stakeholders, namely, policy makers in government ministries, National Poverty Eradication Programme, members of the National Assembly, representatives of development agencies, Non Governmental Organizations, Community Based Organizations, Journalists and the Private Sector. Their inputs will be used to update the policy recommendations of the project and in updating of the policy briefs. The outputs of the workshop will also be published in national daily’s so as to sensitize the Nigerian public.

After the workshop, a follow up action will be initiated to facilitate the implementation of the findings of the project. The follow up action will be carried out through National Poverty Eradication Programme (NAPEP) and the NGO’s that campaign against trafficking in persons and that educate the public on dangers on going abroad unprepared, for example, Women’s Right Advancement and Protection Agency (WRAPA). The NGOs’ will help sensitize government to initiate action on issues of remittance in line with the findings of the study. In line with the findings of the study, a proposal on antipoverty programme that the NAPEP can carry out will be developed and sent to the secretariat. The contacts already established in the NAPEP secretariat will help ensure that the proposal is considered. Also, to enhance the dissemination of the findings, articles to be derived from the study will be published in scholarly journals within and outside the region.
**Expected Capacity Building for Researchers and their Institutions**

Some members of the research team are still in the beginning stage of their research career and some do not have PHD degree. The experience from this research study will help improve their abilities in empirical research studies especially poverty studies. Techniques of handling large household data, poverty impact analysis and inequality decomposition and use of statistical soft wares, for example DAD, are new to these young researchers. This study will provide a practical training ground for them in these areas. The researchers will further help in building the capacity of their colleagues in the Faculties and Departments in poverty research. It will also provide a training ground for them in writing research reports and papers thus enhancing their contribution in scholarly journals. The researchers are also involved in teaching in their respective departments; hence, the experience from the research study will enhance their ability in guiding students especially in their research projects. Our institutions will benefit as the needed capacity for effective teaching and research endeavour will be acquired in the process of carrying out the research study. Their institutions will also benefit in terms of research materials that will be acquired and deposited in the libraries. It is important to note that some departments in our university are under partial accreditation by Nigeria University Commission due to poor capacity of teaching and research academics. Also, the collaboration and communication with other scientists involved in the PEP network will facilitate capacity building of the researchers and in building future collaborations in solving the poverty problem of Nigeria and Africa.

**Expected Contributions of Each Member of the Research Team to the Research**

The Team leader, Nnaemeka Chukwuone will be responsible for overall coordination of the project. He will be involved in data analysis and report writing. A senior researcher, Benjamin Okpukpara will supervise the project and make contributions especially as regards econometrics and analysis of data and report writing. He and the team leader will help in training the other researchers in poverty impact analysis, inequality decomposition and use of some statistical soft wares for data analysis. The two female researchers, Ebele Amaechina and Evelyn Iyoko, and the team leader will be involved in day to day research activities especially in literature review and
modeling/analysis and report writing. Also, the other young researcher, Sunday Enebeli-Uzor will be involved in literature search and data analysis.

**Projects in Related Areas Involving Team Members**

**Current Project:** Costs in Nigeria haring of agricultural technology delivery in Nigeria  
**Funding Institution:** African Technology Study Policies Network (ATPS)  
**Team Members Involved:** Nnaemeka Chukwuone

**Current Project:** Analysis of Conservation and Utilization of Non-wood Forest products in Southern Nigeria: Implications for Forest Management and Poverty Alleviation  
**Funding Institution:** African Economic Research Consortium and African Forestry Research Network  
**Team Members Involved:** Nnaemeka Chukwuone

**How the Results of the a Preceding Project by a Team Member was Disseminated**

Although the team member involved in a preceding project is no longer an active member of our team because of his involvement in another project, the project which he was involved was well disseminated. In February 2006, the team for that project held a well attended dissemination workshop where policy makers especially in the health sector and those involved in poverty eradication programme took active part. Also, the team leader of that project has also presented the findings of the project to a policy intervention group “Enugu Forum” in South East Nigeria. Based on this study, the team leader has often been invited by the ministry of health to prepare policy document in relation to health financing in Nigeria. The team leader also attended a conference on health economics in France where he presented the findings of the study. Journal publications from the project, beside that published by the PEP network are under review in some scholarly journals.