REMITTANCE MULTIPLIER EFFECT: DO MIGRANT REMITTANCES IMPACT THE MASS OF NON-MIGRANT HOUSEHOLDS IN NIGERIA?

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Abstract

Remittances to Nigeria, like to the rest of the developing world, show rapid growth in the last two decades. This work estimated the effects of these emergent migrant transfers on the Nigerian non-migrant households who do not receive the funds. These non-migrant households constitute the larger population share, and like the remittance dependent households, are often characterised by low income, inadequate access to resources and found mostly in agricultural related risk coping strategies. The Nigerian General Household Survey and the National Living Standard Survey were sources of a pooled data used for the analyses. Both surveys conducted by the Nigerian Bureau of statistics gained supports from the World Bank. From the perspective of the compound multiplier theory, the "two stage least square" technique was employed in the data analysis. Results showed that remittances did not only improve migrant household consumption, it also increased incomes of non-migrants' households through its multiplier effect.

Keywords: *Migrants, Remittances, Households, Multiplier Theory, Consumption and Income*

1. INTRODUCTION

1.1. Background Information

Development reports showed that the volume of remittances to developing countries have been growing significantly over the years. They have increased on average by 16% annually since 2000 (Guptal et al., 2009). Remittances now ranked second to foreign direct investment (FDI) in terms volume of capital inflows to developing nations. World Bank (2009) found that

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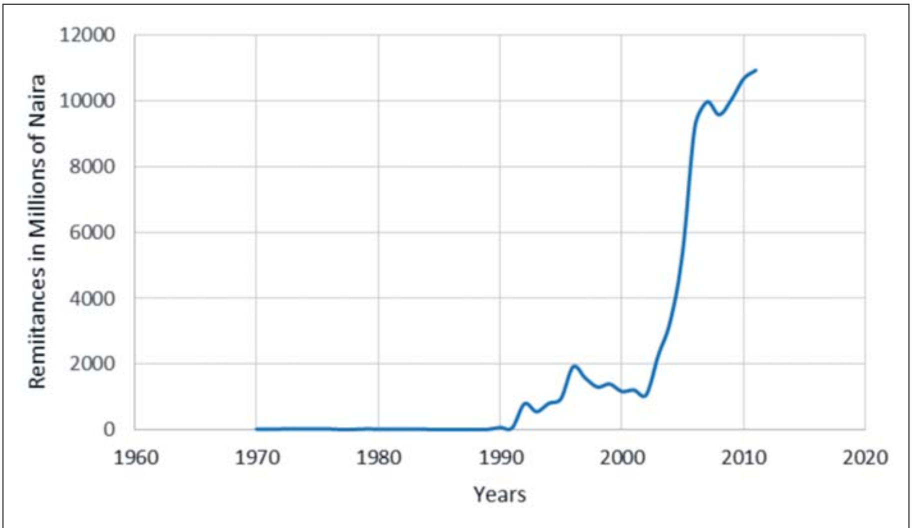
that in 2008, official remittance flows to developing economies reached US$338 billion, higher than the initial forecast of US$328 billion. More so, evidences of underreporting of remittances abound, so that it exacts volume could more than double the official recorded transfers.

Nigeria accounted for the largest share of African migrant population in the United States of America and Europe between 1995 and 2000 (SAMP, 2006). This large population in addition to the growing number of Nigerian migrants worldwide in the last decade had led to the continual increase of international remittances to the country. For example, World Bank (2008) submitted that Nigeria was the highest receiver of remittances in Africa and the thirteenth in the World. Total value of workers' remittances plus compensation of employees received in 2008 was US$9.98 billion. In the same year, FDI was US$4.876 billion and Official Development Assistance (ODA) was US$1.290 billion (World Bank, 2009). Figure 1 provides the growth curve of remittances to Nigeria from 1970 to 2011. Aggregate migrant remittances to Nigeria grew from US$16.97 million in 1970 to US$10.941 Billion in 2011.

Figure 1: ***International remittances to Nigeria (1970-2011)***



Source: Derived by authors from Central Bank of Nigeria and Nigeria Bureau of Statistics Reports.

However, a pooled sub-sample of household data from Nigerian Living Standard Survey-2003/2004 (NLSS-2004) and Nigerian General Household Survey-2010/2011 (GHS-2011) showed that of 1228 households, only 123

(10%) received international remittances. Studies elsewhere corroborate the fact that very small proportions of developing countries populations received remittances from abroad. For example, Ghanaian Living Standard Surveys showed that, 7.9%, 8.8%, 6.1% and 8.1% of surveyed households received international remittances in the period 1987/88, 1988/89, 1991/92 and 1998/99 respectively (Quartey, 2006). Data from the Malawian Integrated Household Survey in 1997 to October 1998 showed that, out of a representative sample of 6826 households across Malawi, a total of 2,046 households (29.97%) reported receiving remittance income during the month preceding the survey (Davies, Easaw, Joshy & Ghoshray, 2006). Study carried out in Viet Nam showed that the proportion of households receiving international remittances were 5.9 and 7.1 percent in 2002 and 2004, respectively. In Kosovo Remittance Survey of 2011, about 25% of households in Kosovo receive remittances (UNDP, 2011).

These figures explain the fact that fewer households in developing economies often have the economic capability to migrate to warrant remitting back home. Therefore, this study sought answers to key research questions. First, "to what extent, if at all, the emergent remittances inflows impact the mass of poor non-migrant households who do not receive remittances through its impact on the few households who receive? A whopping 80-90 percent of total remittance income goes for consumption spending whereas only 10 to 20 percent goes into savings and investment (World Bank, 2009). Drawing from the preceding findings, a second key question becomes apropos; can remittances still be considered as productive? The multiplier theory, under the framework of two-stage least square analyses provided some responses to these questions. Specifically, this work estimated the increase in income of non-remittance recipient (or non-migrant) farm households due to increased consumption spending by international remittance recipients (or migrant) households.

1.2. Theoretical Framework

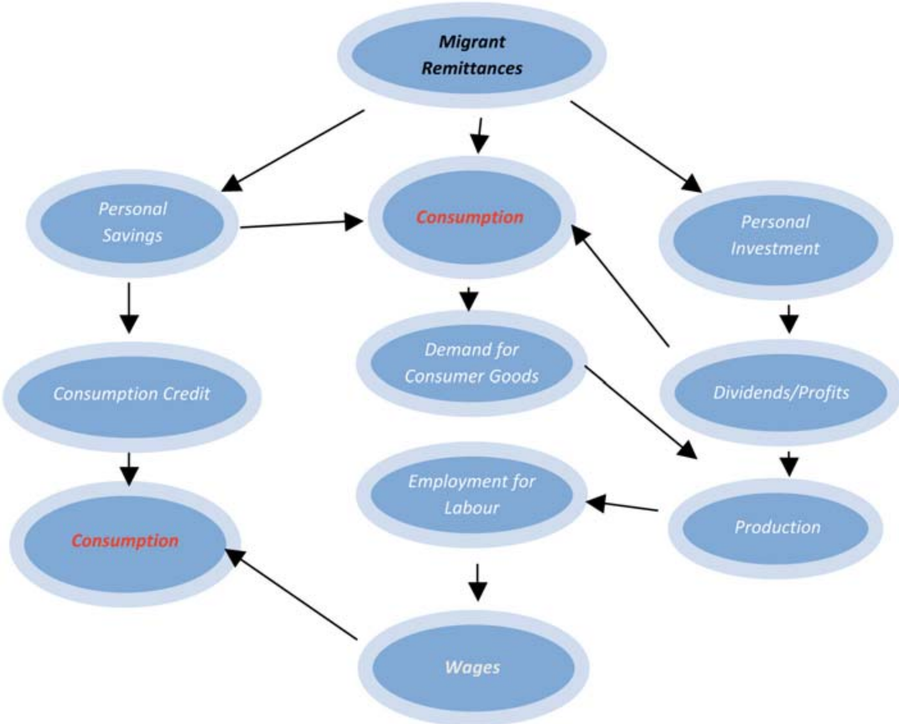
Departing from the simple multiplier to the compound multiplier perspective in his study of the multiplier theory, Lange (1943) in Gallo (2002) postulated that, an initial autonomous increment in the rate of consumption implies an equal increase in income and leads through induced investment and consumption, to further increments in income.

Lange had a macroeconomic perspective whereby increased public spending triggers increase in national income and so on. He also considered that private consumption and private income will also respond to changes in the national economy. Furthermore, Lange looked at a situation of leakage into the economy via external trade which can as well trigger a multiplier effect that trickle down to the individual households. This situation is similar to the case in this research whereby a country receives positive external influence particularly, massive inflow of remittances, which do not only impact the economy, nor only the remittance recipients but also the masses through its multiplier effects.

Remittance income will not directly translate to increase income for non-remittance recipients. It will first, lead to increased consumption for its recipients and in turn stimulate increased investment (either by the remittance recipient or the non-recipient households). Then it will further lead to increased income and a larger increase in aggregate consumption (comprising increased consumption for both the remittance recipient and the non-recipient households). This ripple effect theorised the goal of this research, to estimate increased income of non-remittance recipient (or non-migrant) farm households due to increased consumption spending by international remittance recipients (or migrant) households.

Although 80-90 percent of total remittance income goes for consumption spending (World Bank, 2009), remittance spent on consumption may not be classified as unproductive. Remittance pushed consumption could still lead to economic growth as consumption creates investment demand through its multiplier effect. Significant empirical evidences pointed out that remittances lead to positive economic growth, be it through increased consumption, savings or investment (Mallick, 2008). At the microeconomic level, for example, increased household spending on consumption in the form of healthcare, schooling and housing can have important favourable effects on human capital and productivity. This favourable effect implies higher labour efficiency and greater outputs for remittance receiving households. Positive multiplier effects will also help to spread the benefits to non-migrants' households. These ripple effects that can be partly attributed to increased consumption reach the remittance recipient households as well as the non-recipient households. The combined effects of remittances on investment and consumption can further increase output and growth. They can boost aggregate demand and therefore output and income with a multiplier effect as high as 1: 3 or even more (Van Doorn, 2003 as cited in Thao, 2009). Remittances are, therefore, associated with better development outcomes. Figure 2, derived from the works of Glytsos (1993) and Thao (2009) depicts the direct and indirect (multiplier) effects of remittances on household's income and consumption.

Figure 2: ***Remittances, Consumption and Production Nexus***



Source: Derived by authors from works of Glytsos (1993) and Thao (2009)

A few theoretical models illustrating income or consumption co-variation between households within a village are relevant in explaining the transmittal of remittance effects. Such models include: risk-sharing model, consumption-track-income model and the permanent income model (Alderman and Paxson, n.d). A central element of these models is that consumption co-varies between households within villages, just as it does between households across villages. This co-variation is subject to limitations imposed by information asymmetry, idiosyncratic income shocks and insurance market segmentation.

3. METHODOLOGY

3.1. Study Area and Sampling Procedure

The study drew data from Nigerian households, with particular emphasis on the farm households due the widespread of the incidence of poverty among this group. The GHS-2011 and NLSS-2004 were sources of data for this analysis. The Nigerian Bureau of Statistics (NBS) in conjunction with the World Bank conducted both surveys. Subset of the microdata used for this research included 158 households (79 who reported receipt of international remittances and 79 who did not report receipt of remittances) selected from GHS-2011. From the NLSS-2004 the subsamples were 44 households who reported receiving international remittances and 44 who did not report receipt of remittances. Subsamples from both GHS-2011 and NLSS-2004 summed up to 246 households for the analyses. Whereas selection of each of the remittance recipient households was purposive, subsampling of the non-remittance recipient households was based on nearest neighbour and socioeconomic characteristics matching. That is; a non-remittance recipient household was selected if her demographic and socioeconomic characteristics were the closest to those of a nearest recipient household.

Households were matched based on closeness or equality of socioeconomic characteristics, including nearness of residence and if they were in same year of observation. But the analyses were carried out across the two different years of observations. Endogenity problem that may be associated with pooling data from different years of observation was partly handled by employing the real values of the dependent variable (household's real per capita consumption) instead of the observed values, using 2005 as a base year. In the same manner, other monetary variables that are potentially responsive to time variation (remittances and income) were converted to their real values, and to the household per capita values.

Although the data was a pool from two different time periods (2011 and 2004) they were appropriate because the two surveys were conducted independently. The pooled data possess the property of a cross-section because each observation was independent of the other.

3.2. Data collection and Preparation

The cross sections of secondary data derived from GHS-2011 and NLSS-2004, amidst other important facts, contain information on remittances received by each household. The survey elicited answers for several relevant questions. Such questions 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. The questionnaire also included: were 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 last 12 months. Again it posed such questions as: 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)? Furthermore, the survey provided data on food and non-food consumption expenditures including household income components, assets and demographic characteristics. Preliminary and ancillary information (e.g. national remittance data) were retrieved from published books, journals, annual reports, bulletins, progress reports, websites, etc. of relevant organizations.

3.3. Analytical Techniques

3.3.1. Two-stage least square

Increased income of non-remittance recipients' households due to increased consumption spending by international remittance recipients' households was estimated within the framework a simultaneous equation model. The first equation (1) within the model is a simple cross sectional model to address the question of how additional remittance income will increase households' per capita consumption.

$$RPcc_0 = \alpha_0 + \alpha_1 RPinc0 + \alpha_2 RPcr + \alpha_3 Age + \alpha_4 Sex + \alpha_5 Hsz + \alpha_6 Edu + \alpha_7 Occ + \alpha_8 Ecz + \mu_0 \quad (1)$$

$RPcc_0$ is the real per capita consumption of remittance recipient farm households; RPcr is the real per capita remittances received. $RPinc_0$ is the real per capita income of households from all sources excluding remittances. RPcr was considered exogenous in this equation. Equation (1) yielded an instrumental variable, predicted real per capita consumption ($RPcc_1$) employed in OLS equation (2). Given that α_2>0, the necessary condition for solving the issue identification in equation (2) was satisfied. Other variables common to both equations were: age of household head (Age), sex of household head (Sex), households' size (Hsz), number of years of formal education of household head (Edu). Both equations also have: households' main occupation (Occ), and household's ecological zone of residence (Ecz). The stochastic or error term, μ_0 captured the unobservable determinants of per capita consumption.

Equation (1) was specified to resolve the question: if households exogenously increase it per capita income, will that increase on the average, cause consumption to rise in those households? This exogenous change is not done in a true experiment, but at least we can think of income increasing exogenously due marginal consumption induced by migrant remittances. A second and key question answered was: if consumption increased (equation 1) will that increase cause increased income for non-remittance recipients. This causal effect may be because the non- recipient cover supply gap created by the increased consumption by the recipients. It may also be because inflow of remittances has caused increased risk sharing between remittance recipients and non-recipients households living within a community assuming that information asymmetry and moral hazards were minimal. To reflect on this relationship, we specified a second equation;

$$RPinc_1 = \beta_0 + \beta_1 RPcc_1 + \beta_2 Age + \beta_3 Sex + \beta_4 Hsz + \beta_5 Edu + \beta_6 Occ + \beta_7 Ecz + \mu_1 \qquad (2)$$

$RPcc_1$ were the predicted values of $RPcc_0$ obtained from equation (1), $RPinc_1$ were non-remittance recipient households real per capita incomes, β_1 was an estimate of increase in income of non-remittance recipient households associated with increase in consumption spending by remittance recipient households, β_0 was the intercept whereas μ_1 was the error term (unobservable determinants of income of non-remittance recipients households).

Apriori, it was expected that $\beta_1 > 0$, other factors (Age, Sex, Hsz, Edu, Occ, Ecz) being equal. That is, with expected higher real per capita consumption by remittances dependents, incomes of non-remittance dependents households would rise, given the multiplier effect of remittances on the economy. With other factors in the equation (2) specified, then we had a two-equations "simultaneous equations model". Of principal interest was equation (2), but the estimation of equation (1), as it should, preceded estimation of equation (2).

Equation (1) described the behaviour of remittance recipients (or migrant) households whereas equations (2) described the behaviour of non-remittance (non-migrant) households. This distinction between the two equations gave each of the equations a ceteris paribus interpretation. Hence, equation (1) and equation (2) made up an appropriate simultaneous equation model. Furthermore, equation (2) that was of principal interest was identifiable because we had an observed variable (RPCr) that shifted the consumption equation (1) while not affecting the income equation (2). The presence of the unobserved income shifter μ_1 made the estimation of the income equation (2) feasible. The estimators so derived were consistent because RPcr in equation (1) was uncorrelated with μ_1 in equation (2).

3.3.2. Matching Methodology

In estimating the effect of remittances on consumption by comparing remittance recipients and non-recipient household's consumption, an analytical issue needs to be handled. Recipients and non-recipient households are likely to have very different values of consumption based on a wide range of characteristics, such as socioeconomic status, demographic status, locational attributes, etc. even before the inflow of remittances. It is crucial to try to separate out the causal effect of remittances from the effect of these pre-existing differences between the "treated" (remittance recipients) and "control" (non-remittance recipients) groups. Matching methods provide a way to do so. Matching ensures approximate equality of the observed covariate distributions in the treatment and control groups. A relevant example of matching methods can be found in the work of Chukwuone, Amaechina, Iyoko Enebelizor and Okpukpara (2012). In studying the effect of remittances on poverty; they considered receiving remittances as a "treatment", estimating an average treatment effect of remittance using propensity score matching approach.

Two stages are vital in matched observational studies. Stage one specifies the framework in which the units to be compared are selected, excluding values of the outcome variables. As in the design of a randomized experiment, the matches are chosen without consideration of the outcome data. Outcome variable is ignored in the matching framework to prevent deliberate or unintended bias when selecting a particular matched sample to achieve an anticipated result. Only after the design is set does the second stage begin, which involves the analyses of the outcome, estimating treatment effects using the matched sample.

Matching methods have a variety of simple diagnostic procedures that can be used, most based on the idea of assessing balance between the treated and control groups. Common diagnostics include t tests of the covariates, Kolmogorov-Smirnov tests, and other comparisons of distributions as in the work of Austin and Mamdani (2006). At a minimum, the balance diagnostics employed in this study, involved comparing the mean covariate values in the groups. This diagnostic is sometimes standardized by the standard deviation in the full sample. The standardized differences in means should generally be less than 0.25, and the variance ratios should be close to 1, certainly between 0.5 and 2 (Stuart and Rubin, 2007).

4. RESULTS AND DISCUSSIONS

4.1. Data Description

Matching was done systematically to ensure homogeneity of the respondents in terms of the selected exogenous variables. Although, households within the same village were matched as much as possible, no particular village was chosen for this analysis. The study based on the assumption of approximate homogeneity of Nigerian rural areas (villages) which according to Yusuf and Ukoje (2010) are jointly characterised by the predominance of agricultural related livelihood, low population density, poor infrastructural services and high incidence of poverty.

Reports of GHS (2011) and NLSS (2004) showed that Income inequality in Nigeria rural areas were 0.4239 and 0.4334 in 2004 and 2010 respectively. The 2011 report also showed that 53.3% of the rural dwellers were core poor, 41.2% were moderate poor, and 7.5% were moderate poor. Unavailability of other data sources limited the analyses to those available in NLSS (2004) and GHS (2011). Only 123 persons within the treated group from these available national data bases had consistent information to warrant their inclusion in data analysis. Consequently, via a one-to-one matching of this treated group (123 remittance recipient households) with the control group (123 non-remittance recipient households), only a total of 246 households were available for this analysis.

Tables 1, 2 and 3 present descriptive statistics of the two groups. Table 1 provides within group statistics such as means, range and standard deviations for each of the scaled variables employed in the later analyses. Table 2 depicts the within group means and standard deviations of each of the nominal variables of the two groups. Table 3 compares the means and variances (or standard deviation) between the two groups for all of the variables, except remittances which is an independent variable in the treated group (remittance recipient households) alone.

All (100%) of the remittance recipient households provided information with respect to age of household head, household size, household real per capita consumption, household real per capita remittances, household real per capita income. However, only 29 (24%) of the remittance recipient households provided information about the educational experience of the head of household. Such poor responses posed the limitation of missing data for that particular variable, but the IBM SPSS statistics 21 used for this analysis handles this limitation. Similarly, the 123 (100%) non-remittance recipient households (control group) provided information about the head of households and household size. But 116 (94%), 82 (67%) and 34 (28%) of 123 control

Table 1: ***Descriptive Statistics of the scaled variables of the treated versus control groups (remittance recipient households versus non-remittance recipient households)***

Variables	No of Observations	Minimum	Maximum	Mean	Std. Deviation
Remittance recipient households					
Age of household head	123	21	99	59.16	17.715
Household's real per capita remittances (received)	123	0	3646992	90645.01	387962.9
Years of educational experience of household head	29	1	19	6.1	4.609
Household size	123	1	20	4.8	2.972
Household's real per capita income	123	0	93183	7870.98	15812.28
Household's real per capita consumption	123	0	914471	100895.7	144853
Non-remittance recipient households					
Age of household head	123	19	90	52.68	15.64
Household size	123	1	19	4.93	3.143
Household's real per capita consumption	116	884	1558151	85632.9	177094.5
Household's real per capita income	82	98	414147	29396.56	55415.42
Years of educational experience of household head	34	1	18	9.76	5.188

Source: Results of data analyses from GHS 2011 and NLSS 2004 using IBM SPSS Statistics-2

group provided data on their households' real per capita consumption, households' real per capita income and head of households educational experience, respectively. Again, the problem of missing data was handled by IBM Statisics-21.

Each of the two groups provided 123 (100%) responses to almost all of the nominal variables. The exceptions were for marital status of household head with 122 (99%) responses from the non-remittance recipient household. Others were main occupation of heads with 111 (90%) and 99 (81%) responses from non-remittance recipient households and remittance recipient households, respectively.

Table 2: ***Descriptive Statistics of the nominal variables of the treated versus control groups (remittance recipient households versus non-remittance recipient households)***

Nominal variable	**Group**	**No of Observation**	**Mean**	**Std. Deviation**
Sex of household head	Non-remittance recipient	123	1.26	0.441
	Remittance recipient	123	1.31	0.464
Marital status of household head	Non-remittance recipient	122	1.7	0.458
	Remittance recipient	123	1.71	0.457
Main income generating occupation of household	Non-remittance recipient	111	1.36	0.482
	Remittance recipient	99	1.34	0.477
Ecological zone of residence of household	Non-remittance recipient	123	1.71	0.457
	Remittance recipient	123	1.83	0.378
Sector of residence of household	Non-remittance recipient	123	1.34	0.476
	Remittance recipient	123	1.35	0.479
Year in which household was surveyed	Non-remittance recipient	123	1.64	0.481
	Remittance recipient	123	1.64	0.481

Source: Results of data analyses from GHS 2011 and NLSS 2004 using IBM SPSS Statistics-21

Table 3: ***Comparative Statistics of variables of treated and control groups: Independent Samples t-Test for Equality of Means***

Household variables		**Levene's Test for Equality of Variances**		**t-test for Equality of Means**		
		F	**Sig.**	**T**	**df**	**Sig. (2-tailed)**
Sex of household head	Equal variances assumed	2.857	.092	.846	244	.399
	Equal variances not assumed			.846	243.348	.399
Age of household head	Equal variances assumed	1.132	.288	3.041	244	.003
	Equal variances not assumed			3.041	240.308	.003
Marital status of household head	Equal variances assumed	.007	.935	.041	243	.967
	Equal variances not assumed			.041	242.973	.967
Years of educational experience of household head	Equal variances assumed	.708	.403	.364	63	.717
	Equal variances not assumed			.362	60.695	.719

Household size	Equal variances assumed	1.447	.230	-.334	244	.739
	Equal variances not assumed			-.334	243.233	.739
Household's real per capita consumption	Equal variances assumed	.688	.408	1.466	219	.144
	Equal variances not assumed			1.478	218.094	.141
Main income generating occupation of household	Equal variances assumed	.262	.610	-.255	208	.799
	Equal variances not assumed			-.255	205.749	.799
Household's real per capita income	Equal variances assumed	9.998	.002	-2.692	162	.008
	Equal variances not assumed			-2.692	101.230	.008
Ecological zone of residence of household	Equal variances assumed	21.545	.000	2.281	244	.023
	Equal variances not assumed			2.281	235.695	.023
Year in which household was surveyed	Equal variances assumed	0.000	1.000	0.000	244	1.000
	Equal variances not assumed			0.000	244.000	1.000
Sector of residence of household	Equal variances assumed	.071	.790	.134	244	.894
	Equal variances not assumed			.134	243.992	.894

Source: Results of data analyses from GHS 2011 and NLSS 2004 using IBM SPSS Statistics-21

As seen in table 3, most of the sig 2-tailed values were greater than 0.05 (95% confident interval). These values showed that there were no significant differences means and variances of the treated versus the control group for most of the independent variables. These equalities of means and equality of variances can be linked to the one to one matching of the treated group to the control group on the basis of the selected independent variables. Hence, to a reasonable, extent the matching eliminated the problem of endogeniety in the two-stage least square analyses conducted in this research.

4.2. Effects of Remittances on Migrants Households' Consumption

Equation (1) specified expressed the relationship between real per capita consumption of international remittance recipients and the exogenous variable, real per capita remittances (RPcr) while controlling for other factors listed. The equation yielded the instrumental variable, predicted real per capita consumption ($RPcc_1$) employed in OLS in equation (2). These predicted values obtained from equation (1) regression using automatic data preparation of the IBM SPSS statistics 21 is presented in appendix to this work. RPcr had the highest beta coefficient and largest t value in absolute terms. Thus, RPcr was the lead factor significantly influencing household real per consumption ($RPcc_0$) at 5% probability level (shown in Table 4).

Specifically, 64.8 percent increase in household's real per capita consumption was associated with real per capita remittances whereas only 34.4 percent increase in household consumption can be linked to other income sources ($RPinc_0$). Given that, the coefficient of RPcr is greater than zero (α_2 = 0.648), table 4, the condition for identifying the key equation, equation (2), was fulfilled.

Table 4: ***Effect of migrant remittances on consumption spending of remittance recipient farm households***

Variable	Variable defined	Coefficient	Standard error	beta	t
	(Constant)	15776.028	67055.501		0.235
RPcr	***Real per capita remittances***	***0.648****	***0.123***	***0.676***	***5.252***
Age	Age of household head	-1127.716	746.178	-0.132	-1.511
Sex	Sex of household head	53037.980	29746.219	0.144	1.783
Hsz	Household size	-3186.891	5210.378	-0.055	-0.612
Educ	Years of educational experience of household head	-150.875	490.597	-0.024	-0.308
Occ	Main income generating occupation of household	-7865.770	24186.677	-0.024	-0.325
Ecz	Ecological zone of residence of household	-13551.485	31614.397	-0.037	-0.429
RPinc	Real per capita income	10.277*	3.658	0.344	2.810

R-square: 0.920, Adjusted R-square: 0.883, F Statistics: 24.575*

* Significant at 5% probability level.

Source: Results of data analyses from GHS 2011 and NLSS 2004 using IBM SPSS Statistics-21

4.3. Effects of Increased Migrant Households' Consumption on Incomes of Non-Migrant Households

The result depicts OLS estimates of equation (2). This equation represents the regression of real per capita income (RPinc) of non-remittance recipient households against predicted real per capita consumption ($RPcc_1$) of international remittance recipient households. In doing so, controlling for other factors are listed in table 5, below was necessary. An adjusted R-square of 0.548 and probability F statistics of 0.001 indicates a relatively better fit and greater explanatory power of the linear multiple regression model than with alternative functional forms. Also, the mean residual of 0.00 and the p-p plot show that the data set present a normal distribution. The coefficient of $RPcc_1$ (β_1 = 0.27) showed that 100 percent increase in real per capita consumption of recipients will trigger 27 percent increase in income by non-recipients. That is; 27 percent increase in income of non-remittance recipients' households was found to be associated by100 percent increase in real per capita consumption of remittance recipients. This finding validate the claim in the literature that increase consumption spending due to remittance income will spread benefits to non-remittance recipients.

Spatial closeness of the treated and control households would systematically trigger increased consumption in treated households stemming from increased remittances and increased income for the control household due to increased risk diversification. Risk diversification, according to Krugger and Peri's models is coping strategy for control households to curb income disparity that remittances to the treatment group may bring. Risk diversification may take the form of increased risk sharing between treatment and control households within a village; and increased economic transactions between treated and control households within a village. Increased private consumption by remittance recipients has a demand push effect because benefits spread to non-recipient households when they fill up supply gaps generated by the increased demand.

Table 5: ***Effects of increased consumption spending by recipients on non-recipients income***

Variable	Variable defined	Coefficient	Standard error	beta	t
	(Constant)	3.04*	.51		6.03
$RPcc_1$	***Predicted equilibrium real per capita consumption***	***.27****	***.21***	***.21***	**2.23**
Age	Age of household head	-.01	.01	-.32	-1.89
Sex	Sex of household head	.19	.22	.14	.87
Hsz	Household size	-.05	.03	-.28	-1.50
Educ	Years of educational experience of household head	.04*	.02	.42	2.77
Occ	Main income generating occupation of household	.07	.15	.07	.42
Ecz	Ecological zone of residence of household	.74*	.17	.63	4.39

R-square: 0.661, Adjusted R-square: 0.548, F Statistics: 5.850*

* Significant at 5% probability level.

Source: Results of data analyses from GHS 2011 and NLSS 2004 using IBM SPSS Statistics-21

A caution in results interpretation is yet necessary because non-remittance recipients can enjoy the trickle-down effect when remittance-induced consumption has a positive macroeconomic impact. This trickle-down effect will still be operational even if the non-migrant households do not directly fill the supply gap nor directly share risk with the remittance recipients. Remittance spending on consumption will have positive effects on macroeconomic indices that will impact not only the remittance recipients (migrant) households, but also the non-remittance recipients (non-migrant) households. Durand et al (1996) in Quartey (2006) found evidence of this indirect effect of remittances on households who do not receive remittances. Their studies indicated increased consumption by non-receiving households in rural Mexico, as a result of increased income brought about by increased consumption spending by remittances receiving households. Other corroborating empirical evidences of the indirect effect of remittances were those from several studies by Ratha (2003). He found that remittances do not only raise the food consumption level of recipient households in developing countries; it also has multiplier effects because purchases of locally produced goods forms most part of remittance spending. Empirical finding of the present work as well as those of other comparative studies highlighted here complies with Lange's theory of compound multiplier. As stated earlier, the theory postulate that an initial autonomous increment in the rate of consumption implies an equal increase in income and leads through induced investment and consumption, to further increments in income. Remittances induced consumption, stimulated increased investment whether by remittance recipients or non-recipients, which then leads to increased income for both groups and would further cause increase in aggregate consumption.

5. CONCLUSION AND RECOMMENDATIONS

Remittance incomes from abroad by migrant households had a multiplier effect on Nigeria's economy. Transmission of remittance effect took the path of increased consumption spending by recipients (migrant households) to increased incomes for non-remittance recipients (non-migrant households).

The multiplier effect of remittances on the income and hence on welfare of the general populace will be sustained only by a robust economy driven by entrepreneurial activities. For instance, a non-remittance recipient can enjoy his share of total remittance income into the country by rendering a service or product, or else he remains relatively poor. The remittance recipient may fall back into poverty when remittances stop. They may become relatively poor even while still receiving remittances because of non-involvement in product or service delivery to warrant right positioning in the web of remittance multiplier effects.

Therefore, programmes to encourage the entrepreneurial drive should be instituted or fortify those that already exist. Involvement of multilateral and bilateral agencies, government at all levels, civil society organisations, households and the individuals themselves whether they are remittance recipients in the entrepreneurial drive is a *desideratum*. Entrepreneurship development at all levels will multiply the effects of remittance income on the economy thereby keeping household welfare increasing and sustained. The reverse situation is that remittances will be continually spent on imported manufactured goods and services. The result of such reverse is deindustrialisation leading to the "Dutch disease effect" accentuating a future downward trend in per capita income and declining household welfare.

Key limitation of this kind of study is inadequacy of data. Often a panel data will account much more for the transitory period of multiplier effect which was not much talked about in this paper. Although this issue was somewhat handled by employing data from two time periods it advisable that future researchers employ panel data. Therefore, national interventions are necessary to make this data available for upcoming researches on remittance multiplier effects.

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APPENDIX

Observed and Predicted Values of Real Per Capita Consumption (in Naira) by Remittance Recipients Households in Nigeria

HhidRC	$RPcc_0$	$RPcc_1$	HhidNRC		HhidRC	$RPcc_0$	$RPcc_1$	HhidNRC
10036	97608	83313.26	10035		240098	122903	104671.9	240099
10095	326772	259862.7	10096		240132	126386	105331.3	240130
30077	59322	46498.6	30078		240141	798160	292965.9	240138
30101	124227	107250	30102		240142	182021	249261.9	240139
40054	58782	94846.16	40056		260130	51981	46788.28	260129
40055	27183	18950.93	40057		270041	93880	93619.78	270043
40060	48345	67248.9	40059		270103	149795	96075.69	270106
40095	78527	41723.16	40099		270107	131218	123519.4	270109
40096	226506	210666.6	40100		280039	43874	72297.59	280038
40109	86236	88523.59	40110		290019	45205	14458.22	290017
40115	46979	24428.99	40114		290055	369046	300045.7	290057
40151	114388	99235.4	40150		290124	61502	77213.47	290126
40208	63321	95442.72	40207		290125	79946	125805.5	290139
80023	54766	65571.13	80025		290141	609784	133983.1	290140
90062	139812	39533.73	90060		290169	58961	101114	290166
100091	345694	106020.5	100096		300044	45214	28087.05	300046
100095	21737	57863.71	100097		300065	62733	131167.1	300066
110059	108790	209872	110058		300100	136417	55751.23	300102
110067	74225	81157.71	110068		300124	272338	106581.4	300122
120011	110177	118755.4	120010		300125	683184	221940.8	300130
120015	63011	95746.21	120014		300127	914471	123146.2	300131
120021	62392	143647.7	120020		300129	159680	32616.34	300132
120027	129421	162547.9	120026		300150	234172	259088.3	300154
120087	135695	71184.43	120084		300166	81344	77486.88	300167
120088	62284	113299.9	120089		320147	115026	129655	320146
130021	32520	100513.3	130022		121307014	Missing	32983.53	121207011
140021	143869	82899.47	140022		421001001	884	50089	121308045
140054	324325	234036.7	140055		421204004	184465	85755.62	420906034
140059	195125	70999.91	140058		421310023	23574	139457.2	421001010
150078	107152	17049.83	150076		721109002	943	64613.16	421204008

160022	85253	69907.15	160021		810706114	19350	55588.62	421306060
160030	88944	82975.76	160029		810810003	15912	97539.76	721109010
160033	35396	59637.37	160032		910802027	Missing	167242.2	810706088
160047	71389	44828.69	160048		911801008	2652	53236.55	810809004
160061	104462	41484.28	160062		920804007	1886	49528.36	911601007
160068	107959	181285	160069		1210804030	4518	106223	911802005
160077	35905	18668.57	160078		1211105001	Missing	215962.3	920804003
160085	98914	18191.5	160088		1211304002	19645	44871.53	1210804040
160095	114882	106990.3	160093		1211803121	45674	168907.7	1211105012
160113	79472	106261	160114		1311308018	Missing	39231.36	1211203070
160140	180770	107571.9	160139		1311409019	1768	74873.37	1311304023
160141	163981	100385.7	160142		1311503001	Missing	27610.18	1311409027
160174	176769	64083.95	160172		1421207006	1072	6649.38	1311503016
160184	67670	47194.6	160182		1610709025	Missing	76274.21	1421207032

HhidRC	**$RPcc_0$**	**$RPcc_1$**	**HhidNRC**		**HhidRC**	**$RPcc_0$**	**$RPcc_1$**	**HhidNRC**
160185	110065	51622.9	160186		1620809002	393	11247.56	1610709052
170035	106611	137350.1	170032		1621201003	Missing	231323.9	1620809006
170104	41943	135453.8	170103		1621606003	Missing	64787.91	1621201006
180005	161703	63698.85	180006		1811110005	4125	120977.6	1621606002
180020	142743	169130.4	180023		2021705021	14144	54133.69	1810808036
190009	81260	67716.69	190010		2411304019	Missing	197956.3	2021705012
220052	115117	66382.98	220053		2411808002	1179	49788.49	2411305058
230027	238730	116152.1	230028		2411809068	Missing	55044.49	2411809083
230054	148012	74115.42	230055		2710801045	Missing	181494.5	2710801022
240038	94116	118916.3	240039		2711310001	Missing	186725.1	2711210064
2810704005	12769	47049.93	2810704002		3011206043	Missing	77378.38	3011209054
2910801011	4715	89904.04	2910801030		3011206055	Missing	95619.17	3011305066
2910801040	Missing	127394.8	2910802015		3011403010	Missing	91982.72	3011404008
2910803016	5893	154023.4	2910803030		3011403016	11787	163045.6	3011404023
2911202031	15155	54250.1	2911201001		3710302001	94295	148251.7	3710204004
2921203016	43219	64103.5	2921103018		3710302004	23574	116069.8	3710208034
3011206008	Missing	63435.1	3011201089		3710302005	106082	160836.7	3720101008
3011206019	Missing	85341.94	3011209038					

Where:

HhidRC = Household identification number of remittance recipients households

HhidNRC = Household identification number of non-remittance recipients households

$RPcc_0$ Real per capita consumption of remittance recipients household measured in Naira

$RPcc_1$ Predicted values of $RPcc_0$ which served as instrumental variable for equation (2)

NB: Closeness of values of Each pair of HhidRC and HhidN indicate that the households were nearest neighbours

Source: Calculated from data obtained from GHS-2011 and NLSS-2004, $RPcc_1$ was result of IBM SPSS Stat