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The Impact of Migrant Remittances on Household Welfare in Rural Nigeria

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Abstract: Records on remittances by Central Bank of Nigeria shows an increasing trends since 2002. These huge flows of remittances are made up of millions private receiver households. The study examine the impacts of these remittances on household welfare in rural Nigeria using the Nigeria living standard statistics 2003/2004 wave by the bureau of stastistics. The result of the regression analysis revealed among other things that remittances help to reduce the effects of poverty and that remittances are counter-cyclical.

Key words: Remittances, welfare, poverty, household, Nigeria

INTRODUCTION

International remittances refer to money and goods that are transmitted to households back home by people working away from their origin communities.

Remittances to developing countries have dramatically increased over the past few years. According to the World Bank's Global Economic Prospects (2006), remittances to middle and low-income countries amounted to about 30 billion Dollars in 1990. Fifteen years later, they are estimated to have reached about 170 billion dollar, implying annual growth rates that are well above 10%. Remittances now account for about 30% of total financial flows to the developing world and provide significant foreign exchange earnings. The dramatic increase in remittances observed at the global level over the past few years has been mirrored in Nigeria. In fact, officially recorded remittances flows to the country have increased tremendously since Central Bank of Nigeria (CBN) began collecting data on remittances in 2002. CBN reported approximately US $2.26 billion, $2.66 and $3.56 in remittances for 2004, 2005 and 2006, respectively. These figures probably under-estimates the tremendous rate of increase in international remittances to Nigeria, in as must as large amount of such income enters the country in a way that is not counted. To buttress this, IMF (2005) statistics showed, while total remittances to Nigeria via formal channel in 2005 was $2.6 billion, fund remitted through informal channels exceeded $3 billion. Although, this estimate is likely to be on the high side, it nevertheless highlights the fact that a collapse in remittances appears unlikely in the near future. In other words, the assumption that remittances are here to stay, at least in the short run, is realistic.

Some evidence indicates that remittances flow have positive macro-economic effects in recipient countries. Large remittances flows improve a country's credit worthiness for external borrowing and hence, enhance the country's credit worthiness for external borrowing and hence, enhance the country's access to International Capital Markets. Moreover, some financial institutions in developing countries have been able to tap into International Capital Markets under relatively favorable conditions through securitization of future flows.

Given the nature, Magnitude and evolution of remittances flows, development practitioners now view remittances as having potentially important role to play in supporting the development efforts of recipient countries. Remittances can support these efforts through two main channels. First remittances could flow to the neediest groups of the population and, therefore, directly contribute to poverty reduction. Even if these flows are fully consumed, a concern of many development practitioner, they could have significant positive welfare effects. Second, with respect to Insurance and financial markets, remittances could contribute to increased investment in human and physical capital. For example, they could remove some of the financial constraints to investment faced by households and small-scale entrepreneurs. Similarly, remittances can provide insurance and, therefore, allow households and entrepreneurs to pursue riskier asset accumulation strategies. In this regard, remittances could help raise the country's long-run growth potential through higher rates of capital accumulation.

In practice, however, other effects may counter balance these potential positive impacts. For example, it important costs are associated with the act of migrating, migrants may not come from the lowest quintiles of the income distribution and therefore, remittances may not flow to the poorest people. Thus, the location of the recipient households in the income distribution and the

magnitude of the corresponding flows are taken into account. Despite the increasing flow of migrant remittances to Nigeria, the relationship between migrant remittances and household welfare in Nigeria in times of economic shocks has received little empirical investigation (using household price shocks). The principal aim of this study is to examine the impact of migrant remittances on household welfare. In doing so the study intends to investigate whether remittances significantly affect household welfare in Nigeria.

DATA FOR THE STUDY

The study uses the Nigeria Living Standards Survey (NLSS) 2003/04 data to address these issues. The focus of analysis is on international remittances, although internal remittances are also an important contribution to household welfare. The reason for focusing on international remittances is that their total amount is greater than internal remittances and the impact on poverty is higher (Adams and Page, 2003). The sample design was a 2-stage stratified sampling. The first stage involved the random selection of 120 housing units called Enumeration areas (EAs) from each state and the Federal capital Territory. At the second stage, a total selection of 5 housing units from each of the selected EAs was chosen. Thus, a summing up to 22200 households across the country (NBS, 2005). For the purpose of this study, the secondary data was first stratified into rural and urban sectors. The second stage is the selection of the sampled rural households. The dataset provides detailed records on household expenditure (which will be used as a proxy for household income) and household characteristics. However, 14514 rural households whose responses were consistent were used for the analysis.

THEORETICAL AND ANALYTICAL FRAMEWORK

This part of the study, outlines the econometric theory drawn upon to investigate the impact of migrant remittances on household welfare and draws extensively on the research of Glewwe (1991). The objective of individuals and households according to economic theory is to maximize utility subject to a budget constraint. Utility is not observable, but is a construct representing household welfare. Empirically, we require something that is both observable and a good indicator of household welfare, for this we choose household consumption.

Duality theory allows us to express consumer decisions in terms of expenditure required (cost) functions, which specify the money needed by a utility-maximizing household to attain a certain level of satisfaction. The amount of expenditure required (denoted by X) to attain a given level of satisfaction depends on the prices of goods and services (p_1, ….., p_n), characteristics of household members such as their ages and sex (a_1, …, a_m) and the utility level (U) that the household wants to obtain. This can be expressed as:

$$X^n = E(U; p_1, ..., p_n; a_1^n ..... a_m^n) \quad (1)$$

where, h superscript denotes a particular household. The model can be extended to compare utility levels of households living in regions with different price structures as follows:

$$\frac{X_B^h / [m(.)s_B]}{P_r(U^B, Q)} = \frac{U^B; p_1^B, ..., p_n^B}{P_r(U^B, Q)} = E_1(U^B; p_1^A, ..., p_n^A) \geq \text{or} \leq E_1(U^A; p_1^A, ..., p_n^A) \quad (2)$$

$$X^h / [m(.)s_j] = \frac{A_A^k / S_A}{m(.)} \text{ as } U^B \geq \text{or} \leq U^A \quad (3)$$

We investigate the determinants of household welfare by regressing

$$X^h / [m(.)s_j]$$

on various exp;anatory variables assumed to be exogenous or predetermined. This is simply a reduced form estimate of various structural relationships (earnings functions, agricultural production functions, etc.) that affect welfare. We group explanatory variables into five categories: Household composition variables, regional dummy variables (Rh), physical assets owned by the household (Kh), human capital, e.g., education and work experience of household members (Eh) and community characteristics (Ch). In generalizing Eq. 3 across several regions, the function to estimate is:

$$\frac{A}{m(a_1^h, ..., a_m^h; pa_1^j, ..., pa_n^j)s_j} = F\begin{pmatrix} a_1^h, ..., a_1^h; Ra_1^h, ..., Ra_\gamma^h; K_1^h, \\ ...., E_1^h, ..., E_1^h, ..., E_e^h; C_1^h, ..., C_c^h \end{pmatrix}.\varepsilon. \quad (7)$$

where,ε is a multiplicative term accounting for random (unobserved) effects. We can never estimate m(.) without making certain untestable assumptions. An incorrect estimate of m(.) will affect the parameter estimates on hm h_a, ..., a_i in the function m(.) so that we cannot determine whether particular types of households are generally

likely to have higher or lower levels of household welfare. Given this state of affairs, we allow a broader estimate to work this out. Specifically, if we multiply both sides of Eq. 3 by m(.) , take the logarithm of both sides and assume a convenient linear form of the logarithms of F(.) and m(.), we obtain:

$$\log\left(X^h / s_j\right)=\sum_{j=1}^{\gamma}\sum_{i=1}^{m}\alpha_{ij}\ a_i^h+\sum_{i=1}^{\gamma}\beta_{ai}\ a_i^h + \sum_{i=1}^{\gamma}\beta_{ki}\ K_i^h+\sum_{i=1}^{e}\beta_{ei}\ E_i^h+\sum_{i=1}^{e}\beta_{ci}\ C_i^h+e \quad (5)$$

The α 's are the parameters of m(.), the β's are parameters of F(.) and e = log (ε). When estimating Eq. (5) we identify $()_{ij\ ai}\ \alpha + \beta$ within any region j, not $_{ij}\alpha$ or $_{ai}\beta$ separately. Intuitively, we can measure the impact of household expenditures, but we cannot relate this to unobservable household utility.

EMPIRICAL MODEL

The principal hypothesis to be investigated by this study is that migrant remittances significantly improve household welfare. Single approach is used. The approach uses quantitative techniques to ascertain how a household welfare is influenced by remittances and also economic shocks. This basically involves formulating a standard poverty profile function that includes (in addition to the basic determinants) two other variables: remittances and variance of prices faced by households (an index for economic shocks). The data are extracted from the Nigeria Living Standards Survey. The absence of earlier empirical work on the impact of migrant remittances on household welfare in Nigeria presents a challenge to this study, as there are no existing results against, which a comparison could be made.

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

$$(\ )\ j\ ij\ i \log ui = \alpha + \Sigma\beta\ X + \varepsilon$$

where, ε is the error term, which is assumed to be independent and normally distributed and is white noise and ui is real per capita expenditure (denoted by X in the analytical framework above) and X's are a vector of explanatory variables including migrant remittances and economic shocks (as measured by food and non-food prices). Other explanatory variables and their expected signs are discussed as follows.

Earlier studies (Glewwe, 1991; Grootaert, 1997; Teal, 2001; Ravallion, 2001; Litchfield and Waddington, 2003; Tunali, 2000;) on remittances and welfare have identified 6 broad categories of variables to explain household welfare or poverty. Following these earlier studies, it is postulated that household welfare is influenced by the following:

First, migrant remittances, that is, access to foreign inflows or transfers, tend to supplement domestic resources and help smoothen consumption. However, the ways remittances are used may vary with respect to the economic status of the migrants' households. Richer households are expected to invest the remitted earnings on various forms of enterprises (either productive or unproductive), while poorer households are expected to give priority to satisfying their basic consumption needs. Thus, private remittances would be an important decision parameter for household consumption.

Economic volatility has been identified as one of the factors affecting the degree of income inequality in an economy thereby increasing poverty incidence. Economic shocks may take different forms. Low agricultural output due to poor rainfall, declines in real wages due to inflation, frequent terms of trade shocks, volatility in public consumption and volatility of credit to the private sector are all significant factors in explaining economic volatility. It has been observed that migrant remittances are pro-cyclical, i.e., the flow of remittances increases in times of economic shocks and therefore they tend to reduce the effects of shocks on household poverty (Chami *et al*., 2005).

Household welfare or poverty status is also influenced by household composition variables-a measure of the contribution of various household members to household income as well as household needs. It includes such variables as sex and household size.

This argument is supported by the life-cycle hypothesis, which postulates that demographic variables affect consumption or welfare (Ando and Modigliani, 1963). The dependency ratio is the most common demographic variable. The young and the elderly are expected to consume out of past savings, while those within the working age are expected to accumulate savings. A developed capital market as well as the number of children in the family are alternative means of maintaining income in old age.

Household size is also likely to affect consumption since there may be synergies from larger household size both in production and in consumption. Working in groups can be more productive through improved supervision, pooling of tools and experience, or higher motivation. Meanwhile, food preparation can be less costly for larger groups.

The amount of land holdings is another useful determinant of consumption, the proportion of land holding area has a proportional direct effect on household consumption.

Households with large land areas are likely to have higher income than households with low land holdings. Even in situations where, householders do not cultivate the land by themselves, they could rent it out for a fee. Thus, land holdings are expected to have a direct positive effect on consumption via income.

Generally, household education is likely to have a positive effect on household welfare (consumption). Since, the mean level of education is expected to be significant this is likely to affect household welfare. A widely used measure of education is the maximum number of years of education per household member, the head of the household or the mother. It has been argued that the level of education of the mother is more likely to have a positive impact on household food consumption than the level of education of the male head of household (Bruck, 2003). This study uses the maximum number of years of the head of the household.

According to Kyereme and Thorbecke (1991), the age composition of the household is important. This is measured using a fertility index (ratio of the number of children aged under than 15 to all other household members) and maturity index (the average age of these children divided by the average age of the remaining members. These two important household composition variables measure two opposing effects children may have on the household: first, the presence of children increases the dependency ratio; but second, as children become older, the net burden may diminish since they may add to the stock of earners, particularly in rural areas where, children support their parents on the farm. In addition, employment variables such as the composition of the household's workforce, i.e., share of adults employed, share of adult females employed, etc., also explain household welfare.

Physical asset endowment also influences household poverty or welfare status. These variables include land ownership (in acres), real value of livestock, farm equipment and non-farm assets. The number of livestock is another important determinant of welfare.

It is expected that farmers or households with larger livestock units have higher income, which bears a direct effect on welfare. Also, the sector of economic activity affects one's consumption. Households whose occupations fall within manufacturing, industry and services are better off than food crop farmers according to the NLSS report. In addition, households who have off-farm employment are likely to be better off than households without, particularly because of the seasonality of agriculture in Nigeria.

Locational variables such as region of residence, or rural versus urban, explain household poverty since they define the spatial contributions to affluence or poverty. Location effects are manifest in infrastructure and other unobserved geographical differences (Litchfield and Waddington, 2003).

Income is another major determinant of welfare. The Keynesian consumption function and the permanent income hypothesis of Friedman postulate a positive relationship between welfare (consumption) and income. According to the permanent income hypothesis, which distinguishes between permanent and transitory components of income, households will spend mainly the permanent income. The transitory income is channeled into savings with a marginal propensity to save from this income approaching unity. The positive relationship postulated by Keynes and Friedman's permanent income hypothesis has been confirmed by empirical studies (Rossi, 1988; Gupta, 1987; Koskela and Viren, 1982; Avery and Kannickel, 1991).

EMPIRICAL RESULTS

Table 1 gives a definition of variables used for the study. The index of economic shocks or volatility is measured as the standard deviation of prices faced by households during the survey period. It was possible to determine the standard deviation of prices because data on prices were collected months apart, thus a pseudo-panel data was created by dividing the NLSS data into two group based on time interval.

The regression attempts to investigate how remittances affect households within each of the seven

Table 1: List of variables

Variable	Definition
Lwelfare	Log of per capita household consumption per adult equivalent
Lpremit	Log of per capita household remittance
Fpindex	Volatility index for food price in 2003/049
Interact	Interactive term: the product of lpremit and Fpindex
Agehead	Age of household head
Hhsize	Size of household
Sexhead	Gender of household head
Noeduc	Household head has no education (No formal education, cannot read or write)
Basic	Head of household has basic education (primary and middle school education)
Secondary	Head of household has secondary education (junior and senior secondary edu)
Postsec	Head of household has post-secondary education (nursing training, teacher training, etc.)
Tertiary	Head of household has tertiary education (polytechnics, universities, higher professional training institutions, etc.)
Land	Household does not own land
ecozone2	Household located in forest belt
ecozone3	Household located in savannah belt
loc2	Household located in rural area
Year	Dummy for the period 2003/04

Table 2: Regression results

Regressor	Full sample	Public sector	Private formal	Private informal	Export farmers	Food crop farmers	Non-farm workers	Non-workers
Lpremit.	117	0.1249	0.384	0.403	0.165	-0.002	0.201	0.114
	(0.0)	(0.016)	(0.09)	(0.017)	(0.307)	(.959)	(0.0)	(0.202)
Fpindex	-.007	-.0318	-.266	0.301	-053	-.011	.013	-.015
	(0.431)	(0.041)	(0.599)	(0.32)	(0.260)	(0.404)	(0.214)	(0.472)
Interact	.0005	.0002	-.003	-.003	-.002	.003	-.0007	.0008
	(0.151)	(0.800)	(0.27)	(0.094)	(.231)	(0.00)	(0.131)	(0.499)
Hhsize	-.061	-.0866	.060	.0438	-057	-.055	-.078	-.077
	(0.0)	(0.00)	(0.051)	(0.369)	(0.200)	(0.035)	(0.0)	(0.002)
Agehead	.0001	.0039	-.017	-.033	-.003	.0009	-.0009	.005
	(0.932)	(0.431)	(0.002)	(0.001)	(0.727)	(0.766)	(0.771)	(0.125)
Sexhead	-.108	-.0987	-.0585	0.396x	-0.38	-.0522	-.139	.003
	(0.014)	(0.286)	(0.698)	(0.698)	(0.886)	(.507)	(0.059)	(0.975)
Land	-.155	.1087	-.031	-.364	0.211	-.2733	-.105	.419
	(0.019)	(0.444)	(0.86)	(0.065)	(0.432)	(0.002)	(0.228)	(0.001)
Year	-.181	1.7202	4.57	.090	5.35	-1.454	-.703	.165x
	(0.720)	(0.014)	(.038)	(0.961)	(0.067)	(0.057)	(0.302)	(0.302)
Ecozone2	.043	.1444	-0.463	.081	.139	.0232	.104	-.088
	(0.471)	(0.139)	(.003)	(0.712)	(.732)	(.826)	(0.250)	(0.555)
Ecozone3	-.303	-.5634	-.86	1.842	-1.45	-0.069	-.254	-.502
	(0.012)	(0.0)	(0.049)	(0.002)	(0.160)	(0.662)	(0.091)	(0.174)
Loc2	-.346	-.7554	-.922	-.634	-1.79	.0511	-.189	-.147
	(0.0)	(0.0)	(0.001)	(0.09)	(0.007)	(0.713)	(0.080)	(0.398)
Noeduc	.088	.1419	-.070	-.203	.0054	.141	-.02	.325
	(0.224)	(0.478)	(0.83)	(0.309)	(0.982)	(0.209)	(0.870)	(0.014)
Basic	.274	.6389	-.754	-.298	.086	.2529	.053	.693
	(0.006)	(0.047)	(0.002)	(0.284)	(0.69)	(0.055)	(0.718)	(0.0)
Secondary	.329	.2394	-.331	0.378	0.507x	.972x	.200	.272
	(0.0)	(0.266)	(0.237)	(0.210)	(0.210)	(0.210)	(0.206)	(0.206)
Postsec	.291	.3341	-.100	1.052	.589	.4416	-.154	.192
	(0.004)	(0.162)	(0.658)	(0.004)	(.107)	(0.033)	(0.326)	(0.293)
Tertiary	.371	.4528	-.614	—-	—-	.1008	.345	.571
	(0.001)	(0.128)	(0.105)			(0.519)	(0.046)	(0.005)
Constant	13.65	14.1459	12.74	10.679	15.20	13.775	12.95	13.3
	(0.0)	(0.0)	(0.00)	(0.0)	(0.00)	(0.0)	(0.0)	(0.0)
R-Squared	0.5005	0.5245	0.613	0.767	.552	0.5240	0.4771	0.5707
No. of Obs.	1416	396	196	234	39	283	185	83
F ()	37.65	19.14	20.54	—	—	—	19.54	47.19
Prob > F	0.00	0.00		—	—	—	0.00	0.00

Table 3: Test for counter-cyclicality of migrant remittances (covariance)

	Income	Inflation shock	GDP shock	Rainfall shock
Remittances	0.14	0.34	0.38	0.37
Expected sign	-	+	+	+

sectoral occupations. We run a model for the complete set of observations, as well as seven sectoral regressions. Table 2 presents the results of the regressions. Column 2 (Model 1) presents the results for all the observations. Columns 3 (Model 2) through 9 (Model 8) produce results for the various socioeconomic groupings defined earlier.

In model 1, the coefficient of the interaction term, interact, unlike in the pseudo model, takes on a positive sign but is insignificant, suggesting that migrant remittances minimize the impact of economic shocks on household welfare but the effect is not significant. At the sectoral level, that is public sector workers (Model 2), food crop farmers (Model 6) and non-workers (Model 8), the coefficient for the interaction term is also positive but is significant only for food crop farmers. This means that remittances received by these households may have been enough to mitigate any negative impact of shocks on their welfare. This has a very important policy implication, the NLSS reports indicated that although poverty had declined between the two periods, it increased for some groups of people, the majority of whom were food crop farmers. Thus, it can be concluded that migrant remittances mitigate any impact of economic shocks on the welfare of the poorest of the poor. For private formal sector workers (Model 3), private informal sector workers (model 4), export crop farmers (Model 5) and non-farm workers, the coefficient is negative, but insignificant except for private informal sector workers, meaning that this group of workers was hardest hit by the shock. There are some sectoral differences; whereas welfare significantly improved between the two periods for households headed by public sector workers, private formal sector workers and export farmers, it deteriorated for households headed by food crop farmers. For the others, i.e., private informal, non-farm and non-workers, no significant impacts occurred between the two periods. Finally, we test whether migrant remittances to Nigeria are

counter-cyclical. If remittances are counter-cyclical, a negative correlation is expected between income or GDP and remittances (Chami *et al*., 2005). In other words, an increase in economic shocks is expected to increase remittance flows to Nigeria.

In line with the apriori expectations, a negative correlation exist between income and remmitances thus, indicating an increase in economic shocks lead to increase in remmitances inflows into Nigeria during the study period. Thus, remmitances was counter- cyclical (Table 3).

POLICY IMPLICATIONS

The study investigated the impact of migrant remittances on household welfare in Nigeria using Nigeria Living Standards Survey. The analysis revealed some very interesting findings. First it was found that migrant remittances improve household welfare and the flow of such remittances increases in times of economic shocks, hence, they are counter-cyclical. Thus, the remittances help to minimize economic shocks that reduce household welfare, particular for food crop farmers. Moreover, households that own land are able to withstand economic shocks and therefore tend to have better welfare than those without land. Whereas the level of education of the household head positively affects welfare, age of the head of the household negatively correlates with household welfare although this was not significant. The study also, found that larger households have reduced welfare, an indication that there is an absence of consumption synergies within larger households.

CONCLUSION

In conclusion, there has been considerable increase in inflows of migrant remittances to Nigeria and these remittances have not only improved household welfare but have become an important source of income for consumption smoothing in Nigeria. The study suggests that policies should be designed particularly for the poorest of the poor (food crop farmers) to ensure that the cost of transferring funds to relations in Nigeria is reduced. Food crop farmers who receive remittances should be given a rebate (handling charges or higher conversion rate) to improve their welfare levels. A related issue is that since migrant remittances have become important sources of income for consumption smoothing for households, policies should be designed to ensure that remittances sent through the banks and other transfer institutions attract little or no interest. Additionally, there are other informal means of sending remittances to Nigeria and therefore the central bank should design a regulatory framework that will integrate the informal channels of sending migrant remittances into the formal.

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