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## International Remittance Inflows and Household Welfare: Empirical Evidence from Nigeria

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### Abstract

The contribution of remittances income in mitigating poverty and income inequality in Nigeria has attracted very little attention in general. Very few studies have looked at the quantitative relationship between remittance inflows, poverty and income inequality in Nigeria even though it is now believed that total remittance inflows into Nigeria; exceed Foreign Direct Investments (FDI) and Overseas Development Assistant (ODA). Using poverty and Gini decomposable techniques, the study finds that household poverty declines across all the geopolitical zones, by sex and locality as a result of remittance inflows. For example, with remittances, household poverty falls from 0.35 to 0.30 in the South-South region, 0.27 to 0.22 in the South-East region and 0.43 to 0.36 in the South-West region. Poverty also declines from 0.67 to 0.60 in the North-Central region, 0.72 to 0.66 in the North-East and from 0.71 to 0.66 in the North-West regions. Similarly, in the Gini decomposition; the study finds that increase in remittances reduce income inequality more in urban areas (0.1) than in rural areas (0.02). For example, a 10% increase in remittances other things being equal, is associated with declines in the Gini coefficients of total income inequality of 0.02% in rural area and 0.1% in the urban area.

**Keywords:** Remittance income, household welfare, Nigeria

### 1. Introduction

Remittance is one of the most important outcomes of migration. The International Monetary Fund (IMF) splits remittances into three categories: workers' remittances, from workers who have lived abroad for more than one year; compensation of employees or labour income, including wages and other compensation received by migrants who have lived abroad for less than one year; and migrants' transfers, the net worth of migrants who move from one country to another.

It is now believed that migrants' remittances into Nigeria exceed Foreign Direct Investments (FDI) and Overseas Development Assistance (Fonta *et al.* 2011). The importance of these inflows into Nigeria is evidenced by the proliferation of money transfer institutions (both formal and informal) and the rapid growth in the volume of migrant remittances. The World Bank's Migration and Remittances Factbook estimated total remittance inflows into Nigeria from official channels to be over US\$10billion in 2010 (World Bank 2011). Thus, placing Nigeria as the world's top 10 remittances destination country in 2010 as shown in Table 1.

However, understanding the poverty and income dynamics of these large inflows into Nigeria is central to any attempt to minimize the negative effects of migration, while optimizing its development potentials in the country as a whole. While a number of studies have done so for several Latin American and Asian countries (Acosta *et al.* 2006a, 2006b, 2007; Fajnzylber & López 2007) for Latin America; Lokshin *et al.* (2007) for Nepal; Adams (2004) for Guatemala; Taylor *et al.* (2005) for Mexico; Yang & Martinez (2005) for the Philippines etc., and found that remittances have some potentials for reducing both poverty and income inequality as well as improving growth. Relatively, very few studies have tried to evaluate the impacts of remittances and the remittance environment in Nigeria, where poverty rates are relatively high compared to other countries in the world. Thus, the aim of this study is to help fill this knowledge gap by providing new policy insights on the impacts of international remittance inflows on national development in Nigeria.

## **2. Remittances, Poverty and Inequality: Global Evidence**

Stark (1991) & Adams (1991) pioneered the effort to assemble household data that could rigorously shed light on the impact of remittances on household welfare. Although, their findings were limited by small sample size, the insights from these studies provided the basis for subsequent analysis in the area of migrant remittances and household welfare. Among the first stream of researchers who attempted to rigorously shed more light on the impact of remittances on household welfare was Adams (1989) who examined the distributional implications of workers remittances in rural Egypt, and found out that income inequality declined with increasing remittance inflows. However, contrary to Adams earlier finding, Adams (1998), Adams & Page (2003, 2005), found a neutral effect on poverty and income inequality in the case of Pakistan and some selected LDCs. However, a re-assessment of Adams & Page (2003, 2005) findings by Bertoli (2005), suggests that their results were specifically driven by poor quality data and the use of inappropriate econometric techniques. Still at the country specific level, Adams (2004), also found out that remittances reduce the severity of poverty in Guatemala and also that Guatemalan families who report remittances, 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.

For rural Mexico, Taylor *et al.* (2005), found out 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. In Philippines, Yang & Martinez (2005) found out that remittances lead to a reduction in poverty in migrants' origin households. For Somalia, Lidley (2006) also found out that remittances received by a substantial minority of Somalian city dwellers improve their economic status and access to education. Recent studies by Quartey (2006), Adams *et al.* (2008) in Ghana; Chukwuone (2008), Okoli (2011) & Fonta *et al.* (2011) in Nigeria; Konan (2008, 2009a, 2009b) in Ivory Coast, found out that remittance inflows reduce both poverty and inequality.

At the cross-country level, Adams & Page (2003) observed that for 74 low and middle-income developing countries, 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 poverty reduction in the developing world. Specifically, the authors found out that on the average; a 10 per cent increase in the share of international migrants in a country's population will lead to a 1.6 per cent decline in the poverty headcount. Similar results were obtained by the same authors studying the impact of remittances on national development for 71 developing countries (Adams & Page 2004). The authors also observed 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 1USD daily in that country. Still at the cross-national level, examining the impacts of international remittances on national development for 115 developing countries, Adams (2005) found out that international remittances increases the level of household income and reduces the level and depth of poverty in the developing world. The author further found out that remittance-receiving households consume and invest their remittance earnings and that households

receiving international remittances spend less at the margin on consumption goods – like food – and more on investment items - like education and housing. Also, households receiving remittances have a higher likelihood of investing in entrepreneurial activities. In Latin America, *Acosta et al. (2007)*, using a large cross-country panel dataset for 10 Latin American Countries (LACs) to examine the welfare and growth effects of remittances to the region, found out that remittance in LACs increases growth as well as reducing inequality and poverty. Still for the same region, *Fajnzylber & López (2007)* in ‘*Close to Home*’, found out that, even though the estimated impact of remittances on poverty, inequality and growth for some LACs is moderate, country specific heterogeneity is still very significant and that higher remittances inflow in general, tend to be associated with lower poverty levels and with improvements in human capital indicators (education and health) of the recipient countries. Also, the authors found out that remittances seem to contribute to higher growth and investment rates and lower output volatility.

To the best of our knowledge, there have been very little efforts in Nigeria to quantitatively estimate the impacts of remittance income on poverty and inequality. The aim of this study is to help bridge this gap by providing new empirical evidence on remittance inflows and household welfare in Nigeria. Our specific research objectives with an overriding aim of providing policy-relevant evidence are; to analyze the distributional and poverty effects of remittance income in Nigeria using poverty decomposable techniques (*Foster et al. 1984*) and to estimate the impacts of remittance income on income inequality using the Gini decomposable technique (*Lerman & Yitzhaki 1985*).

### 3. The Analytical Frameworks

To analyse the poverty redistributive effects of workers remittances on household welfare in Nigeria, three variants of the Foster-Greer-Thorbecke (*Foster et al. 1984*) poverty decomposable indices were used. Following Foster-Greer-Thorbecke (FGT 1984), the poverty index is calculated as:

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

where  $\alpha \geq 0$

where,  $y = (y_1, y_2, \dots, y_n)$  represents the income vector of a population of  $n$  individuals with incomes sorted in increasing order of magnitude,  $z$  is the poverty line (Note 1),  $q$  is the number of poor individuals, and  $\alpha$  is a weighting parameter that can be viewed as a measure of poverty aversion. For  $\alpha = 0$ , the FGT index gives the simplest and most common example of poverty index; the head count ratio (i.e., the percentage of poor in the population). For  $\alpha = 1$ , the FGT index reduces to the average poverty gap ratio (i.e., the average shortfall of income from the poverty line or how far below the poverty line the average poor household’s income falls). For  $\alpha = 2$ , the FGT index indicates the severity of poverty or the spread of the poor around the level of the average poor. *Foster et al. (1984)* presents a decomposition of the poverty index by population subgroup, while *Reardon and Taylor (1996)* proposed a simulation method to decompose the FGT poverty coefficient by income source (*Lopez-Feldman et al. 2007*). We however, opted for the later approach in our poverty simulation of the impact of remittances income on poverty in Nigeria.

In the second experiment estimating the impact of international remittances on income inequality, the Gini coefficient decomposition technique was used. Following *Stark et al. (1986)*, the Gini coefficient for total income inequality,  $G_T$ , is calculated as:

$$G_T = \sum_{k=1}^K R_k G_k S_k \quad (2)$$

Where  $S_k$  represents household share of income source  $k$  on total income, and  $R_k$  stands for the Gini correlation between income from source  $k$  and the distribution of total income (*Acosta et al. 2007*). Equation (2) therefore allows us to decompose the influence of any income component, in our case remittances income, upon total income inequality, as a product of three easily interpreted terms, namely: (i) how important the income source is in total income ( $S_k$ ); (ii) how equally and unequally distributed the income source is ( $G_k$ ); and, (iii) how the income source and the distribution of total income are correlated

( $R_k$ ). In other words, what is the extent to which the income source does or does not favour the poor?

Lerman & Yitzhaki (1986), showed that by using this particular method of Gini decomposition, the effects of a small change in income from any source say  $k$ , can be estimated, holding income from all other known sources constant. This effect is given by:

$$\frac{\partial G_T / \partial k}{G_T} = \frac{S_k G_k R_k}{G_T} - S_k \quad (3)$$

which shows that an infinitesimal change in income  $k$  has equalizing (un-equalizing) effects if the share of the Gini explained by that source income is smaller than its share in total income (*Acosta et al.* 2007).

### 3.1 Data

The data used for the analysis was extracted from the Nigerian Living Standards and Measurements Survey – NLSMS of 2004, conducted by the National Bureau of Statistics (NBS, 2004). The survey is a standard World Bank Living Standards survey that covers all the 36 states of Nigeria including the Federal Capital Territory (FCT), Abuja. The data is further divided into the six geopolitical zones in Nigeria and 19,158 households were interviewed with 92,610 individuals captured in the data. The data contains information on household incomes from various sources including remittances and where the recipients of remittances live. Remittances have three components in the data namely value of cash remittance, value of food remittance and value of remittance of other items sent to the household. In the data, there are over 600 households that received money and other goods from household members living outside the household and over 554 households that receive money and other goods from non-household members. The files containing the remittance variables were merged with the files containing the household roster variables and other socioeconomic variables used for the analysis. Altogether, five files were merged. After the merging, a total of 15,556 households were used for the analysis. Out of 15,556 households used for the study, 94% (14,630) of this total received remittances while only 6% (926) did not receive remittances. The population weight was used as the weighing variable while the household size was used as the size variable.

### 4. Poverty Decomposition

The results of the FGT experiment are presented in table 1. The decompositions are done by zone, sex and location of the household head classified by those that received remittances and those that did not received. As indicated, without remittances, the poverty rate measured by the head count index is about 0.35 in the South-South Region, 0.27 in the South-East Region, 0.43 in the South-West Region and 0.67, 0.72 and 0.71 in the North-Central, North-East and North-West Regions respectively. The results also showed that male-headed households have higher poverty compared to female-headed households and rural poverty is higher than poverty in the urban areas. Based on the assumption that remittances add exogenously to household income, the results further showed that with remittances, household poverty declines across all the geopolitical zones and also by sex and locality. For example, with remittances, household poverty fell from 0.35 to 0.30 in the South-South Region, 0.27 to 0.22 in the South-East Region and 0.43 to 0.36 in the South-West Region. Poverty also fell from 0.67 to 0.60 in the North-Central Region, 0.72 to 0.66 in the North-East Region and from 0.71 to 0.66 in the North-West Region. However, the effect of remittances on poverty is larger in the South-West Region than in the South-East and South-South Regions. Remittances have larger impact on poverty reduction in the North-Central than in the North-East or North-West Regions, and the impact larger in the North-East than in the North-West Region.

Overall, remittances impact more on poverty in the South-West and North-Central Regions than other geopolitical zones where the impact is almost similar. Further, the impact of remittances on poverty reduction in urban and rural areas is identical and this is also the case when households' heads are classified by sex. The results further suggest that remittances have larger impact when the education level of the household head is lower than at higher levels of education. This might be due to the fact that remittances are just a small proportion of total income or spending of household for which the head has higher level of education than the households with lower level of education. Therefore a little addition to the income of households at the lower end of income distribution will have larger effect on poverty reduction.

Furthermore, we decomposed the poverty indices by the level of educational attainment by household heads

(see table 2). As expected, poverty is lower as the level of education increases. For example, household heads with no education have a poverty rate of 69 percent, while those with primary education have a poverty rate of 48 percent. The poverty rate among those with tertiary education is about 43 percent and surprisingly, it is the same as those with secondary education. When remittances are introduced, the impact on poverty reduction becomes more pronounced at higher levels of education. For example, if the head of the household has no education and receives remittances, poverty decreases from 0.69 to 0.63 (that is a decrease of 0.07 percent). On the other hand, if the head of the household has attained tertiary education level and receives remittances, poverty rate declines from 0.43 to 0.21 (decrease of 0.22 percent). It does appear that remittances become a more effective tool of poverty reduction with increasing level of education of the head of the household. Table 3 further shows that while poverty is lower among the households that received remittances, the share of households that received remittances in national poverty is about 94 percent and those that did not receive has only 5 percent share in national poverty. This suggests that remittances will be very effective in poverty reduction if its inflow increase in the future.

#### 4.1 Inequality Decomposition

The results of the decomposition of the contributions of remittances income and other income sources to total per capita household net income and income inequality both in urban and rural Nigeria are presented in table 4. The first column, labelled  $S_k$ , represents the share of each income source (i.e., wage, agriculture, profit, fees, rents, subsidy, total loan, contribution, dividend, property, gift, dowry, remittances, pension and others) in the per capita total income for rural and urban households in Nigeria. As observed, the principal sources of household income for urban Nigeria are wages and profit incomes (43 per cent and 27 per cent, respectively). For rural Nigeria, the principal income sources are wages (18%), agriculture (29%), profit (23%) and gifts (13%). However, for the entire sample, wages are the principal source of income with a percentage contribution of over 26%. Next to wages, is profit income contributing over 24% followed by agricultural income with a percentage contribution of over 23%. This is not surprising since majority of the sampled household head was either engaged in wage employment, farming or commerce in both urban and rural. The contribution from remittances stood marginally at 0.4%.

Moving to the next or second column of Table 4 labelled  $G_k$ , reporting the Gini coefficients for each income source by urban and rural categories. As observed, the lowest source Gini coefficient comes from agricultural income with a Gini coefficient of about 0.94. Implying, agricultural income has a very high equalizing income effect in Nigeria after wage and profit incomes. This can easily be verified from the fourth column in the same table labeled  $G_T$  (the share of total income inequality attributed to each income source). As indicated, the share of total income inequality attributed to agriculture, wage and profit incomes are 0.27, 0.21 and 0.25 respectively. Implying that, these three income sources contribute the largest shares to total income inequality in the area. This is largely due to the fact that incomes from these three sources made up high shares of aggregate household income as shown in the column labeled  $S_k$ .

However, to assess whether a given source of income reduces or increases income inequality, all else being equal, if  $R_k > G_k$  and the share of source income ( $S_k$ ) is increased or decreased, then income inequality ( $G_k$ ) will increase or decrease (Fisher 2004). Results of column 3 (i.e., Gini correlation with total income) indicate that the Gini correlation ( $R_k$ ) for all the source incomes are lower than their respective source Gini coefficients. This implies that sources of income with Gini correlation or concentration ratios ( $R_k$ ) with values lower than 0.92 (the aggregate income Gini) help reduce total income inequality. Results in column 4 indicate that, all else being equal, an increased share of income from agriculture, subsidy, total loan, contributions, property, dowry, remittances and other income sources lowers income inequality in both urban and rural Nigeria; while increased income shares from wages, profit, fees, rents, dividends and pensions are associated with higher income inequality. For instance, a 10 per cent increase in agricultural income, subsidy, total loan income, remittances income, or contributions, other things being equal, are associated with declines in the Gini coefficients of total income inequality in Nigeria by 2%, 0.03%, 0.05%, 0.02% and 0.01% respectively. Likewise, 10% increases in wage income, fees, rents or profit incomes, other things being equal, are associated with increases in the Gini coefficient of total income inequality in Nigeria by 1.2%, 0.4%, 0.02% and 1% respectively.

However, generally; the income equalizing effects of these income sources are different between the urban and rural areas respectively. For example, while income derived from fees reduces income inequality by as

much as 0.2% in the urban areas, it increases it at the rural areas by as much as 0.5%. Also, while income derived from rents increases inequality in the urban areas by 0.1%, it equally reduces it in the rural areas by as much as 0.1%. The same could be said about dividend income, while it is associated with inequality increase of about 0.02% in the urban areas, it is associated with a decline of 0.01% at the rural areas. One good thing about remittances is that they have equalizing effect on household income both in the urban and rural areas. For example, the results show that a 10% increase in remittances reduces inequality by 0.02% in rural area and 0.1% in the urban area. It is therefore expected that as remittances increase in the future and become a more significant component of household income, it will have a substantial impact in equalizing income among households.

## 5. Conclusion

The summary message of the above findings is that remittances income can have an important role in mitigating poverty and income inequality in Nigeria. However, the impacts are unevenly distributed across the different regions, by sex and by educational attainment. For instance, remittances reduce poverty more in the South-West Region than in the South-East and South-South Regions. Similarly, the impact of remittance inflows on poverty reduction becomes more pronounced when received by household heads with higher levels of education. For example, if the head of the household has no education and receives remittances, poverty decreases by 0.07 per cent. On the other hand, if the head of the household has attained tertiary education level and receives remittances, poverty rate declines by over 0.22 per cent. Furthermore, the study finds remittance income to be more income equalizing in the urban areas (0.1) than in rural areas (0.02). For example, a 10% increase in remittances other things being equal, is associated with declines in the Gini coefficients of total income inequality of 0.02% in rural area and 0.1% in the urban area. All these call for more intervention measures by the three tiers of the government in planning migration policies and the remittances regulatory framework in the country. This may include policies that promote and encourage the growth of informal social institutions that accelerate regular movement and migration leverage, reduction in remittance transaction costs as well as, instituting legal frameworks, laws and policies that encourage remittance inflows.

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## Notes

Note 1. The poverty line used is NGN23,700 or about USD 182.3 defined by the National Bureau of Statistics ( NBS) for the 2004 household survey.

Table 1: Diaspora Remittances in Billion US\$: Top Recipients Countries (2006 -2010)

| Country     | 2006       | 2007      | 2008      | 2009      | Country     | 2010      |
|-------------|------------|-----------|-----------|-----------|-------------|-----------|
| India       | \$26.9 bn  | \$27 bn   | \$45 bn   | \$55.1 bn | India       | \$55 bn   |
| China       | \$22.52 bn | \$25.7 bn | \$40.5 bn | NA        | China       | \$51.0 bn |
| Philippines | \$12.7 bn  | \$14.4 bn | \$16.4 bn | \$17.3 bn | Mexico      | \$22.6 bn |
| Mexico      | \$25.6 bn  | \$26.1 bn | \$25.1 bn | \$21.2 bn | Philippines | \$21.3 bn |
| Poland      | \$8.5 bn   | \$12.5 bn | \$13.6 bn | NA        | France      | \$15.9 bn |
| Bangladesh  | \$5.5 bn   | \$6.6 bn  | \$9.0 bn  | \$10.7 bn | Germany     | \$11.6 bn |
| Pakistan    | \$5.1 bn   | \$6.0 bn  | \$7.0 bn  | \$8.7 bn  | Bangladesh  | \$11.1 bn |
| Morocco     | \$5.1 bn   | \$5.7 bn  | \$6.9 bn  | \$8.0 bn  | Belgium     | \$10.4 bn |

|                |                 |                 |                 |                  |                |                  |
|----------------|-----------------|-----------------|-----------------|------------------|----------------|------------------|
| Vietnam        | NA              | NA              | \$7.2 bn        | \$6.8 bn         | Spain          | \$10.2 bn        |
| <b>Nigeria</b> | <b>\$5.4 bn</b> | <b>\$9.2 bn</b> | <b>\$9.9 bn</b> | <b>\$9.58 bn</b> | <b>Nigeria</b> | <b>\$10.0 bn</b> |

Showing the world's top ten recipient countries of remittances in billion USD

Sources: World Bank's Migration and Remittances Factbook (2011)

Table 2: FGT Poverty Decomposition by Zones, Sector and Sex, with and Without Remittances

| Group Variable  | Without Remittance |             |             |           |      | With Remittance |             |             |           |      |
|-----------------|--------------------|-------------|-------------|-----------|------|-----------------|-------------|-------------|-----------|------|
|                 | P0                 | P1          | P2          | Share(P0) | risk | P0              | P1          | P2          | Share(P0) | risk |
| <b>Zone</b>     |                    |             |             |           |      |                 |             |             |           |      |
| South South     | 0.35               | 0.11        | 0.05        | 0.10      | 0.64 | 0.30            | 0.09        | 0.04        | 0.09      | 0.62 |
| South East      | 0.27               | 0.08        | 0.04        | 0.06      | 0.49 | 0.22            | 0.06        | 0.03        | 0.06      | 0.45 |
| South West      | 0.43               | 0.18        | 0.10        | 0.15      | 0.79 | 0.36            | 0.14        | 0.07        | 0.14      | 0.74 |
| North Central   | 0.67               | 0.31        | 0.19        | 0.18      | 1.23 | 0.60            | 0.26        | 0.15        | 0.18      | 1.24 |
| North East      | 0.72               | 0.32        | 0.18        | 0.18      | 1.33 | 0.66            | 0.27        | 0.14        | 0.18      | 1.36 |
| North West      | 0.71               | 0.31        | 0.18        | 0.34      | 1.31 | 0.66            | 0.27        | 0.14        | 0.35      | 1.36 |
| <b>National</b> | <b>0.54</b>        | <b>0.23</b> | <b>0.13</b> |           |      | <b>0.48</b>     | <b>0.19</b> | <b>0.10</b> |           |      |
| <b>Sector</b>   |                    |             |             |           |      |                 |             |             |           |      |
| Urban           | 0.53               | 0.23        | 0.13        | 0.24      | 0.97 | 0.47            | 0.19        | 0.10        | 0.23      | 0.97 |
| Rural           | 0.55               | 0.23        | 0.13        | 0.76      | 1.00 | 0.49            | 0.19        | 0.10        | 0.77      | 1.00 |
| <b>Sex</b>      |                    |             |             |           |      |                 |             |             |           |      |
| Male            | 0.56               | 0.24        | 0.13        | 0.93      | 1.04 | 0.50            | 0.20        | 0.10        | 0.93      | 1.04 |
| Female          | 0.37               | 0.15        | 0.08        | 0.07      | 0.67 | 0.31            | 0.12        | 0.06        | 0.07      | 0.65 |

Poverty decomposition results across zones using the three variants of the FGT decomposable index.

Table 3: FGT Poverty Decomposition by Educations Level with and Without Remittances

| Group Variable            | Without Remittance |             |             |           |      | With Remittance |             |             |           |      |
|---------------------------|--------------------|-------------|-------------|-----------|------|-----------------|-------------|-------------|-----------|------|
|                           | P0                 | P1          | P2          | Share(P0) | risk | P0              | P1          | P2          | Share(P0) | risk |
| <b>Educational Groups</b> |                    |             |             |           |      |                 |             |             |           |      |
| No education              | 0.69               | 0.32        | 0.18        | 0.48      | 1.28 | 0.63            | 0.26        | 0.14        | 0.49      | 1.30 |
| Elementary                | 0.69               | 0.34        | 0.21        | 0.01      | 1.27 | 0.62            | 0.29        | 0.16        | 0.01      | 1.28 |
| Primary                   | 0.48               | 0.18        | 0.09        | 0.04      | 0.88 | 0.41            | 0.15        | 0.08        | 0.03      | 0.85 |
| Secondary                 | 0.43               | 0.17        | 0.09        | 0.29      | 0.80 | 0.38            | 0.14        | 0.07        | 0.29      | 0.78 |
| Tertiary                  | 0.43               | 0.09        | 0.05        | 0.04      | 0.46 | 0.21            | 0.08        | 0.04        | 0.04      | 0.44 |
| Other                     | 0.64               | 0.26        | 0.14        | 0.13      | 1.17 | 0.58            | 0.22        | 0.11        | 0.14      | 1.21 |
| <b>National</b>           | <b>0.54</b>        | <b>0.23</b> | <b>0.13</b> |           |      | <b>0.48</b>     | <b>0.19</b> | <b>0.10</b> |           |      |

Poverty decomposition results using the three variants of the FGT decomposable index by educational attainments



Table 4: Poverty Decomposition by Recipients of Remittances

| Received Remittances     | $\alpha = 0$ | $\alpha = 1$ | $\alpha = 2$ |
|--------------------------|--------------|--------------|--------------|
| Not Received Remittance  | 0.56115      | 0.24794      | 0.14036      |
| Received Remittance      | 0.54120      | 0.22979      | 0.12722      |
| % Change in FGT          | 2%           | 1.8%         | 1.3%         |
| Subgroup Poverty 'Share' |              |              |              |
| Received Remittance      | $\alpha = 0$ | $\alpha = 1$ | $\alpha = 2$ |
| Not Received Remittance  | 0.05969      | 0.06196      | 0.06327      |
| Received Remittance      | 0.94031      | 0.93804      | 0.93673      |
| % Change in FGT          | 88%          | 87.6%        | 87.2%        |
| Subgroup Poverty 'Risk'  |              |              |              |
| Received Remittances     | $\alpha = 0$ | $\alpha = 1$ | $\alpha = 2$ |
| Not Received Remittance  | 1.03466      | 1.07409      | 1.09679      |
| Received Remittance      | 0.99788      | 0.99546      | 0.99407      |
| % Change in FGT          | 3.7%         | 7.9%         | 10.3%        |

Poverty decomposition results using the three variants of the FGT decomposable index for entire sample

Table 5: Gini Decomposition by Income Source

| Income source       | Share in total income<br>( $S_k$ ) |             |            | Income source Gini<br>( $G_k$ ) |             |            | Gini correlation<br>( $R_k$ ) |             |            | Share in total inequality<br>( $G_T$ ) |             |            | Marginal effect * |             |            |
|---------------------|------------------------------------|-------------|------------|---------------------------------|-------------|------------|-------------------------------|-------------|------------|--|-------------|------------|-------------------|-------------|------------|
|                     | <i>Urb.</i>                        | <i>Rur.</i> | <i>All</i> | <i>Urb.</i>                     | <i>Rur.</i> | <i>All</i> | <i>Urb.</i>                   | <i>Rur.</i> | <i>All</i> | <i>Urb.</i>                            | <i>Rur.</i> | <i>All</i> | <i>Urb.</i>       | <i>Rur.</i> | <i>All</i> |
| Wage income         | .43                                | .18         | .26        | .98                             | .99         | .99        | .97                           | .97         | .97        | .45                                    | .19         | .27        | .02               | .01         | .012       |
| Agric income        | .07                                | .29         | .23        | .99                             | .92         | .94        | .85                           | .92         | .89        | .06                                    | .27         | .21        | -.005             | -.02        | -.02       |
| Profit income       | .27                                | .23         | .24        | .97                             | 1.0         | .99        | .92                           | .97         | .96        | .27                                    | .24         | .25        | -.004             | .01         | .01        |
| Fee income          | .07                                | .09         | .09        | .99                             | 1.0         | 1.0        | .88                           | .97         | .96        | .07                                    | .10         | .09        | -.002             | .005        | .004       |
| Rent income         | .02                                | .001        | .01        | 1.0                             | 1.0         | 1.0        | .94                           | .79         | .94        | .02                                    | .001        | .01        | .001              | -.0001      | .0002      |
| Subsidy income      | .01                                | .01         | .01        | 1.0                             | 1.0         | 1.0        | .87                           | .88         | .88        | .01                                    | .01         | .01        | -.000             | -.0004      | -.0003     |
| Total loan income   | .01                                | .01         | .01        | 1.0                             | 1.0         | 1.0        | .82                           | .86         | .86        | .01                                    | .01         | .01        | -.001             | -.0004      | -.005      |
| Contribution income | .01                                | .01         | .01        | 1.0                             | 1.0         | 1.0        | .88                           | .91         | .90        | .01                                    | .01         | .01        | -.000             | -.0001      | -.0001     |
| Dividend income     | .003                               | .000        | .001       | 1.0                             | 1.0         | 1.0        | .98                           | .83         | .96        | .003                                   | .0001       | .001       | .0002             | -.0000      | .0000      |
| Property income     | .006                               | .03         | .02        | 1.0                             | .99         | .99        | .80                           | .81         | .80        | .005                                   | .02         | .02        | -.001             | -.0032      | -.003      |
| Gifts income        | .05                                | .13         | .11        | .98                             | 1.0         | .99        | .81                           | .95         | .93        | .005                                   | .13         | .11        | -.001             | .003        | .001       |
| Dowry income        | .001                               | .001        | .001       | 1.0                             | 1.0         | 1.0        | .70                           | .80         | .78        | .001                                   | .001        | .001       | -.000             | -.0001      | -.0002     |
| Remittance income   | .01                                | 0.02        | .004       | 1.0                             | 1.0         | 1.0        | .85                           | .84         | .87        | .01                                    | .002        | .004       | -.001             | -.0002      | -.0002     |
| Pension income      | .01                                | 0.00        | .006       | 1.0                             | 1.0         | 1.0        | .90                           | .94         | .94        | .01                                    | .004        | .006       | -.000             | .0001       | .0001      |
| Other income        | .03                                | 0.01        | .02        | 1.0                             | 1.0         | 1.0        | .91                           | .85         | .89        | .03                                    | 0.01        | .02        | .0001             | -.001       | -.0007     |
| Total income        |                                    |             |            |                                 | .92         | .92        |                               |             |            |  |             |            |                   |             |            |

\* Effects of a 10% increase in per capita income from different sources on the Gini coefficient of total income.

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