The Impact of Remittances on Food Security Status in the Global South

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Abstract

International remittances to developing countries attract increasing attention because of their rise in volume and their impact on the recipient countries. Receiving remittances from outside the country has become a household coping strategy that might reduce poverty, alleviate hunger, promote better diets and increase productive investments. The main purpose of this study is to investigate the link between receiving remittances and the food security status in the Global South countries. This is the first study that examines the association between food security and receiving remittances by using the Food Insecurity Experience Scale (FIES) for individuals in the Global South. Data were obtained from the 2017 Gallup World Poll (GWP), which interviewed face-to-face 68,463 individuals in more than 60 countries. We have found a significant association between receiving remittances and food security. In the unadjusted logistics regression, irrespective of geography, severe food insecurity was significantly related to not receiving remittances (OR=1.532; P= 0.000). Although receiving remittances seems to positively affect the food security status of individuals in the GS, the association might not apply to all countries in the analyzed sample.

Keywords: Remittances; food security; poverty; Global South.

JEL Classification: F22, F24

Introduction

Poverty, food insecurity, lack of employment opportunities, limited access to social protection, and lack of access to natural resources are the main factors which compel people to leave their homes (FAO, 2017). These are labeled as “human insecurity” reflecting various...
conflicts, conflicts of interest, tensions causing discomfort and potentially leading to out-migration (Sirkeci, 2009; Sirkeci and Cohen, 2016). Despite opposing views, remittances are often considered as one of the major benefits of migration to sending countries (Anghel, Piracha, & Randazzo, 2015). Similar to migration, flows of remittances have also increased to developing countries in recent decades despite the adverse effects of the global financial crisis (Sirkeci, 2017:61; Ratha et al., 2016; Sirkeci et al., 2012). Apart from macro level impacts, receiving remittances, as one of the coping strategies, supports families especially in the times of (financial or other) crises (Sirkeci et al., 2012) and contribute to poverty reduction and food insecurity (Dhungana & Pandit, 2016).

Earlier studies have shown that receiving remittances has an impact on household expenditure and (food) consumption (see Adams and Cuecuecha, 2010a; Zarate-Hoyos, 2004). They may lead to increases in overall expenditures or changes in the basket of food and non-food items consumed (Perakis, 2011). For instance, Quisumbing and McNiven (2010) in a study argue that remittances have a positive impact on housing, consumer durables, non-land assets, and total expenditures. Notably, another study shows that households with remittances have high food consumption compared to non-receivers (Adams & Cuecuecha, 2010b). However, little is known about the remittances and food security relationship. Hence, the main purpose of this study is to investigate the potential relationship between receiving remittances and the food security status in Global South (GS) regions. Although there are some studies on different countries that explore the association between receiving remittances and household food quality and quantity consumption or food consumption expenditures, this is the first study that examines the association between food security and receiving remittances by using the Food Insecurity Experience Scale (FIES) for individuals in the Global South (GS).

**Methodology**

Data were obtained from the 2017 Gallup World Poll (GWP), which interviewed face-to-face 68,463 individuals in more than 60 countries (Table 1). The target population in the GWP is the entire civilian, non-institutionalized, population aged 15 and older. All samples were selected using probability sampling techniques and are nationally representative. The GWP annual surveys cover on average 1,000 individuals per country per year. In this study, the GWP data were analysed using various statistical techniques and presented in descriptive tables, cross-tabulations as well as binary, and multinomial logistic regressions. We have particularly examined the potential
association between receiving remittances and the food security status, by controlling the role of covariates. Additionally, the predictors of receiving remittances were also measured.

**Table 1. Sample of the Global South by countries in the GWP (n=68,463)**

<table>
<thead>
<tr>
<th>Regions</th>
<th>Countries</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commonwealth of Independent States</td>
<td>Kazakhstan</td>
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<tr>
<td></td>
<td>Kyrgyzstan</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Tajikistan</td>
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</tr>
<tr>
<td></td>
<td>Uzbekistan</td>
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</tr>
<tr>
<td>Asia (Southeast, South, and East)</td>
<td>Afghanistan</td>
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<tr>
<td></td>
<td>Bangladesh</td>
<td>1000</td>
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<tr>
<td></td>
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<tr>
<td></td>
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<td>Mongolia</td>
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<td></td>
<td>Myanmar</td>
<td>1600</td>
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<td></td>
<td>Nepal</td>
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<td></td>
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<td>1600</td>
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<tr>
<td></td>
<td>Philippines</td>
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</tr>
<tr>
<td></td>
<td>Sri Lanka</td>
<td>1104</td>
</tr>
<tr>
<td></td>
<td>Vietnam</td>
<td>1002</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>Argentina</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Bolivia</td>
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</tr>
<tr>
<td></td>
<td>Uruguay</td>
<td>1000</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
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<td>1000</td>
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<tr>
<td></td>
<td>Jordan</td>
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<td></td>
<td>Lebanon</td>
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<td>Tunisia</td>
<td>1001</td>
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<td></td>
<td>Yemen</td>
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<tr>
<td>Sub-Saharan Africa</td>
<td>Benin</td>
<td>1000</td>
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<td>Botswana</td>
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<td>Burkina Faso</td>
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Table 1. Continued.

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<thead>
<tr>
<th>Region</th>
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<td></td>
<td>Botswana</td>
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<td></td>
<td>Burkina Faso</td>
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<td></td>
<td>Chad</td>
<td>1000</td>
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<td></td>
<td>Congo Kinshasa and Brazzaville</td>
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<td>Ethiopia</td>
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<td>Gabon</td>
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<td></td>
<td>Guinea</td>
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<td></td>
<td>Ivory coast</td>
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<td>Kenya</td>
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<tr>
<td></td>
<td>Liberia</td>
<td>1000</td>
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<tr>
<td></td>
<td>Malawi</td>
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<tr>
<td></td>
<td>Mali</td>
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<td></td>
<td>Mauritania</td>
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<td>Nigeria</td>
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<tr>
<td></td>
<td>Senegal</td>
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<td></td>
<td>Sierra Leon</td>
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</tr>
<tr>
<td></td>
<td>South Africa</td>
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<tr>
<td></td>
<td>South Sudan</td>
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<tr>
<td></td>
<td>Tanzania</td>
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</tr>
<tr>
<td></td>
<td>Togo</td>
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<td></td>
<td>Zambia</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Zimbabwe</td>
<td>1000</td>
</tr>
</tbody>
</table>

Source: GWP, 2017

**Outcome variable (Food Insecurity Experience Scale (FIES))**

The outcome variable is the Food Insecurity Experience Scale (FIES) score, which is used to measure individuals’ questions food security status. As an individual-based index, this tool contains eight items with “yes” or “no” answers, focusing on the access dimension of food security. Responses to the eight are combined, and each individual is assigned a food security score from zero to eight. The FIES was recoded as 0 for “food secure” (FS), 1-3 for “mildly food insecure” 4-6 for “moderately food insecure”, and 7-8 for “severely food insecure”. To run the logistic regression, every single value of the FIES (FS, Mild, Moderate, and Severe FIS) was recoded as a dummy variable.

**Exposure variables**

Receiving remittances is the principal independent variable in this study. The following question is used to measure remittances: “In the past 12 months, did this household receive help in the form of money or goods from another individual living inside this country, living in another country, both, or neither?” The answers to the original question were recoded as either “receiving remittances from outside” or “no remittances.”

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Statistical analyses
Data were analysed using SPSS (Version 24). We have used descriptive statistics to present the frequencies of food security statuses, receiving remittances, and of controlling variables. Crosstabulations were also carried out to explore the association between dependent and independent variables. Two binary logistic regression analyses were also carried out. The first one was performed to assess the association between the food security status and receiving remittances by controlling each of the covariates. The second was carried out to measure the association between receiving remittances and the covariates.

It should be noted that the FIES (as outcome variable) was separated into four different levels with yes and no answers. The level of significance was reported at the P-value equal to or less than 0.05. In the crosstab analyses, apart from the level of significance, the strength of associations between dependent and independent variables was estimated through Cramer’s V and Gamma to show the direction of the association between the variables included in the models.

Results
Table 2 summarises the characteristics of the sample used in this study. The Global South (GS) (n=68,463) is made up of five regions included in this study: Sub-Saharan Africa (SSA) (n=27,000); Middle East and North Africa (MENA) (n=6,013); Latin America and the Caribbean (LAC) (n=16,544); Asia (Southeast, South, and East) (n=14,906); and the Commonwealth of Independent States (CIS) (n=4000).

Regardless of region, 32% of individuals were food secure, while about 28% of individuals were severely food insecure in the Global South. 6% of households were reported to have received remittances from outside the country. Females represented just over half of the sample in this study. In terms of age, 44% of the sample were between 26 and 49 years old. Low level of education was significantly marked in the GS as 51% of the population were categorized as low educated, regardless of sex. The data has also revealed that a little more than a third of the sample were employed full time (36%) and around 50% reported feeling “difficulty” about their household income.

Table 3 illustrates the Food Insecurity Experience Scale (FIES) by regions in the Global South (GS) in 2017: About 14% of SSA and 58% of the Commonwealth of Independent States (CIS) reported being food secure. However, more than 40% of samples in MENA, LAC, and Asia reported being food secure in 2017.
Table 2. Characteristics of sample (n=68,463)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regions</strong></td>
<td></td>
</tr>
<tr>
<td>Commonwealth of Independent States</td>
<td>4,000 (5.8)</td>
</tr>
<tr>
<td>Asia (Southeast, South, and East)</td>
<td>14,906 (21.8)</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>16,544 (24.2)</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>6,013 (8.8)</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>27,000 (39.4)</td>
</tr>
<tr>
<td><strong>Food security status</strong></td>
<td></td>
</tr>
<tr>
<td>Severely food insecure</td>
<td>18,360 (28.3)</td>
</tr>
<tr>
<td>Moderate food insecurity</td>
<td>12,479 (19.2)</td>
</tr>
<tr>
<td>Mild food insecurity</td>
<td>13,065 (20.1)</td>
</tr>
<tr>
<td>Food secure</td>
<td>20,965 (32.3)</td>
</tr>
<tr>
<td><strong>Receiving remittances</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3,373 (6.1)</td>
</tr>
<tr>
<td><strong>Area of residence</strong></td>
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</tr>
<tr>
<td>Rural</td>
<td>44,266 (64.7)</td>
</tr>
<tr>
<td>Urban</td>
<td>24,1925 (35.3)</td>
</tr>
<tr>
<td><strong>Household size</strong></td>
<td></td>
</tr>
<tr>
<td>7 and more</td>
<td>19,488 (28.5)</td>
</tr>
<tr>
<td>4-6</td>
<td>30,230 (44.2)</td>
</tr>
<tr>
<td>1-3</td>
<td>18,745 (27.4)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>35,199 (51.4)</td>
</tr>
<tr>
<td>Male</td>
<td>33,264 (48.6)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>13-25</td>
<td>23,052 (33.7)</td>
</tr>
<tr>
<td>26-49</td>
<td>30,472 (44.5)</td>
</tr>
<tr>
<td>50-64</td>
<td>9,794 (14.3)</td>
</tr>
<tr>
<td>65-99</td>
<td>5,145 (7.5)</td>
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<td><strong>Marital status</strong></td>
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<tr>
<td>Single/never married</td>
<td>24,621 (36.1)</td>
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<tr>
<td>Divorced/separated/widowed</td>
<td>6,437 (9.4)</td>
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<tr>
<td>Married/living with partner</td>
<td>37,161 (54.5)</td>
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<tr>
<td><strong>Education</strong></td>
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<tr>
<td>Completed elementary</td>
<td>34,597 (51.0)</td>
</tr>
<tr>
<td>Secondary-3-year Tertiary</td>
<td>28,963 (42.7)</td>
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<tr>
<td>Four years of over high school</td>
<td>4,344 (6.4)</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
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</tr>
<tr>
<td>Unemployed</td>
<td>5,372 (7.8)</td>
</tr>
<tr>
<td>Out of workforce</td>
<td>24,955 (36.5)</td>
</tr>
<tr>
<td>Employed part-time</td>
<td>13,383 (19.5)</td>
</tr>
<tr>
<td>Employed full-time</td>
<td>24,752 (36.2)</td>
</tr>
<tr>
<td><strong>Feelings about HH income</strong></td>
<td></td>
</tr>
<tr>
<td>Very difficult</td>
<td>13,890 (20.7)</td>
</tr>
<tr>
<td>Difficult</td>
<td>20,216 (30.1)</td>
</tr>
<tr>
<td>Getting by</td>
<td>23,474 (35.0)</td>
</tr>
<tr>
<td>Living comfortably</td>
<td>9,501 (14.2)</td>
</tr>
<tr>
<td><strong>Not enough money for shelter</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>40,340 (60.6)</td>
</tr>
</tbody>
</table>

Source: Data analysis of the Gallup survey, 2017

Table 3. Prevalence of Food Insecurity Experience Scale in regions of the Global South (n=68,463)

<table>
<thead>
<tr>
<th></th>
<th>SSA</th>
<th>MENA</th>
<th>LAC</th>
<th>Asia</th>
<th>CIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe FIS</td>
<td>47.9</td>
<td>12.4</td>
<td>21.6</td>
<td>12.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Moderate FIS</td>
<td>22.6</td>
<td>17.8</td>
<td>16.6</td>
<td>18.4</td>
<td>11.6</td>
</tr>
<tr>
<td>Mild FIS</td>
<td>15.7</td>
<td>18.7</td>
<td>20.6</td>
<td>27.2</td>
<td>24.4</td>
</tr>
<tr>
<td>Food secure</td>
<td>13.8</td>
<td>51.0</td>
<td>41.1</td>
<td>42.2</td>
<td>58.2</td>
</tr>
</tbody>
</table>

Source: Data analysis of the Gallup survey, 2017
Gamma and Cramer’s V coefficients are presented in Tables 4 and 5. The first table focuses on the determinants of the FIES and the second concerned the determinants of receiving remittances.

Table 4 shows the association between the FIES and explanatory variables. A significant association was observed between receiving remittances and the food security status. However, this association was very weak (0.043; P=0.000). All socio-demographic characteristics were also found to be significantly related to food security. Specifically, a significant association was observed between sex and the food security status (0.028; P=0.000). Males were more food secure than females in the GS countries, regardless of region. Association between education and food security was almost substantial (0.353; P=0.000). Unsurprisingly, income per capita was also found to be significantly associated with the food security (0.243; P=0.000). A significant association was observed between family size and household composition and the food security status (0.168; P=0.000). The results indicated that urban people were more food secure than their rural counterparts (0.141; P=0.000). This could be also a reflection of overall urban-rural inequalities in many countries (e.g. Sahn and Stifel, 2003; Thu and Booth, 2014). Food security was related significantly to “feelings about household income" where correlation was strong (0.577; P=0.000). Individuals living with food security felt comfortable about their household income, and people who were not able to afford expenditure for shelter reported being food insecure (0.330; P=0.000).

Table 4. Bivariate analyses between the food security status1 and independent factors (n=68,463)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Strength of association</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving remittances</td>
<td>Cramer’s V 0.043</td>
<td>0.000</td>
</tr>
<tr>
<td>Sex</td>
<td>Cramer’s V 0.028</td>
<td>0.000</td>
</tr>
<tr>
<td>Area of residence</td>
<td>Cramer’s V 0.141</td>
<td>0.000</td>
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<tr>
<td>Age groups</td>
<td>Gamma -0.012</td>
<td>0.016</td>
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<tr>
<td>Marital status</td>
<td>Gamma -0.041</td>
<td>0.000</td>
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<tr>
<td>Household size</td>
<td>Gamma 0.168</td>
<td>0.000</td>
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<tr>
<td>Education</td>
<td>Gamma 0.353</td>
<td>0.000</td>
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<tr>
<td>Employment</td>
<td>Gamma 0.035</td>
<td>0.000</td>
</tr>
<tr>
<td>Per capita income quintile</td>
<td>Gamma 0.243</td>
<td>0.000</td>
</tr>
<tr>
<td>Feelings about household income</td>
<td>Gamma 0.577</td>
<td>0.000</td>
</tr>
<tr>
<td>Not enough money for shelter</td>
<td>Cramer’s V 0.330</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: Gallup World Poll, 2017

1. FIES (0= Severely Food Insecure (FIS); 1=Moderately FIS; 2=Mildly FIS; 3=Food secure)
associated with receiving remittances, except insufficient money for shelter. However, for most variables, the strength of associations was very weak according to Cramer’s V test. Only inadequate finances (i.e. not enough money for the shelter) shown a higher value but this relationship was not statistically significant ($P=0.370$).

**Table 5.** Bivariate analyses between receiving remittances and independent factors ($n=68,463$)

<table>
<thead>
<tr>
<th>Socio-demographic factors</th>
<th>Strength of association</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of residence</td>
<td>Cramer’s V</td>
<td>0.036</td>
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<tr>
<td>Household size</td>
<td>Cramer’s V</td>
<td>0.011</td>
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<td>Education</td>
<td>Cramer’s V</td>
<td>0.036</td>
</tr>
<tr>
<td>Employment</td>
<td>Cramer’s V</td>
<td>0.036</td>
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<tr>
<td>Per capita income quintile</td>
<td>Cramer’s V</td>
<td>0.070</td>
</tr>
<tr>
<td>Feelings about household income</td>
<td>Cramer’s V</td>
<td>0.055</td>
</tr>
<tr>
<td>Not enough money for the shelter</td>
<td>Cramer’s V</td>
<td>0.204</td>
</tr>
</tbody>
</table>

**Source:** Data analysis of the Gallup survey, 2017

Tables 6 and 7 illustrate the unadjusted binary logistic regression between food security and receiving remittances by controlling the role of covariates: Severe food insecurity was significantly more likely among those who were not receiving remittances ($OR=1.532; P=0.000$). Sub-Saharan Africa ($OR=15.28; P=0.000$) was categorized as the region with the most severe food insecurity compared to the other regions. Results from socio-demographic factors of all regions indicated that the probability of being severely food insecure increased among females ($OR=1.061; P=0.000$), living in rural areas ($OR=1.645; P=0.000$), in large households ($OR=1.750; P=0.000$), between 26 and 49 years of age ($OR=1.171; P=0.000$), in the poorest 20% of income quintile ($OR=2.994; P=0.000$), with low education ($OR=6.568; P=0.000$), being unemployed ($OR=1.948; P=0.000$), and divorced/separated and widowed ($OR=1.370; P=0.000$).
Table 6. Unadjusted binary logistic regression analyses between food security, and receiving remittances and covariates (n=68,463)

<table>
<thead>
<tr>
<th></th>
<th>Severe FIS</th>
<th></th>
<th>Moderate FIS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>95% CI</td>
<td>95% CI</td>
<td>Odds ratio</td>
</tr>
<tr>
<td>Receiving remittances</td>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>No</td>
<td>1.532</td>
<td>1.404</td>
<td>1.672</td>
<td>0.897</td>
</tr>
<tr>
<td>Yes (Ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>15.28</td>
<td>13.26</td>
<td>17.60</td>
<td>2.218</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>2.352</td>
<td>2.005</td>
<td>2.760</td>
<td>1.643</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>4.577</td>
<td>3.960</td>
<td>5.291</td>
<td>1.514</td>
</tr>
<tr>
<td>Asia (Southeast, South, and East)</td>
<td>2.309</td>
<td>1.990</td>
<td>2.678</td>
<td>1.705</td>
</tr>
<tr>
<td>Commonwealth of Independent States (Ref)</td>
<td>1.645</td>
<td>1.584</td>
<td>1.707</td>
<td>1.204</td>
</tr>
<tr>
<td>Area of residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>1.645</td>
<td>1.584</td>
<td>1.707</td>
<td>1.204</td>
</tr>
<tr>
<td>Urban (Ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 and more</td>
<td>1.750</td>
<td>1.672</td>
<td>1.832</td>
<td>1.316</td>
</tr>
<tr>
<td>4-6</td>
<td>1.059</td>
<td>1.014</td>
<td>1.106</td>
<td>1.086</td>
</tr>
<tr>
<td>1-3 (Ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.061</td>
<td>1.025</td>
<td>1.098</td>
<td>1.091</td>
</tr>
<tr>
<td>Male (Ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-25</td>
<td>1.006</td>
<td>0.938</td>
<td>1.079</td>
<td>1.035</td>
</tr>
<tr>
<td>26-49</td>
<td>1.171</td>
<td>1.094</td>
<td>1.254</td>
<td>1.093</td>
</tr>
<tr>
<td>50-64</td>
<td>1.036</td>
<td>0.958</td>
<td>1.121</td>
<td>1.044</td>
</tr>
<tr>
<td>65-99 (Ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/never married</td>
<td>0.935</td>
<td>0.901</td>
<td>0.971</td>
<td>0.907</td>
</tr>
<tr>
<td>Divorced/separated/widowed</td>
<td>1.370</td>
<td>1.294</td>
<td>1.452</td>
<td>0.944</td>
</tr>
<tr>
<td>Married/living with partner (Ref)</td>
<td>1.645</td>
<td>1.584</td>
<td>1.707</td>
<td>1.204</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed elementary</td>
<td>6.568</td>
<td>5.854</td>
<td>7.369</td>
<td>2.296</td>
</tr>
<tr>
<td>Secondary-3-year Tertiary</td>
<td>3.297</td>
<td>2.935</td>
<td>3.705</td>
<td>1.743</td>
</tr>
<tr>
<td>Four years of over high school (Ref)</td>
<td>1.645</td>
<td>1.584</td>
<td>1.707</td>
<td>1.204</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>1.948</td>
<td>1.829</td>
<td>2.075</td>
<td>1.280</td>
</tr>
<tr>
<td>Out of workforce</td>
<td>0.930</td>
<td>0.892</td>
<td>0.970</td>
<td>0.975</td>
</tr>
<tr>
<td>Employed part-time</td>
<td>1.524</td>
<td>1.454</td>
<td>1.596</td>
<td>1.221</td>
</tr>
<tr>
<td>Employed full-time (Ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per capita income quintile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poorest 20%</td>
<td>2.994</td>
<td>2.828</td>
<td>3.169</td>
<td>1.788</td>
</tr>
<tr>
<td>Second 20%</td>
<td>2.199</td>
<td>2.075</td>
<td>2.330</td>
<td>1.626</td>
</tr>
<tr>
<td>Middle 20%</td>
<td>1.778</td>
<td>1.676</td>
<td>1.886</td>
<td>1.470</td>
</tr>
<tr>
<td>Fourth 20%</td>
<td>1.381</td>
<td>1.300</td>
<td>1.476</td>
<td>1.337</td>
</tr>
<tr>
<td>Richest 20% (Ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Data analysis of the Gallup survey, 2017

Food security was significantly associated with receiving remittances: Non-remittance receivers were less likely to be food secure (OR=0.898; P=0.000). Similarly, food security was low in Sub-Saharan Africa (OR=0.115; P=0.000) compared to the other regions. Within all regions, the probability of being food secure decreased among people living in rural areas (OR=0.567; P=0.000). Findings also showed that people living in large households (7 and more) were less likely to be food secure (OR=0.484; P=0.000). Females (OR=0.898; P=0.000) were less...
food secure compared to their male counterparts. Our results also shows that divorced/separated and widowed people were less food secure (OR=0.882; P=0.000). Education level was significantly associated with the food security status (OR=0.189; P=0.000). Surprisingly, people who were out of the workforce reported being food secure (OR=1.138; P=0.000). A significant positive association was observed between income quintile and the food security status (OR=0.257; P=0.000).

Table 7. Unadjusted binary logistic regression analyses between food security, and receiving remittances and covariates (n=68,463)

<table>
<thead>
<tr>
<th></th>
<th>Mildly FIS 95% CI</th>
<th>Food secure 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratio Low</td>
<td>Odds ratio Low</td>
</tr>
<tr>
<td>Receiving remittances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0.803 0.739</td>
<td>0.898 0.833</td>
</tr>
<tr>
<td>Yes (Ref)</td>
<td>0.712 0.644</td>
<td>0.840 0.739</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>0.574 0.528</td>
<td>0.874 0.813</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>0.644 0.587</td>
<td>0.748 0.689</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>0.644 0.587</td>
<td>0.748 0.689</td>
</tr>
<tr>
<td>Asia (Southeast, South, and East)</td>
<td>1.155 1.063</td>
<td>0.524 0.487</td>
</tr>
<tr>
<td>Commonwealth of Independent States (Ref)</td>
<td>0.882 0.830</td>
<td>0.937 0.928</td>
</tr>
<tr>
<td>Area of residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>1.006 0.967</td>
<td>0.567 0.549</td>
</tr>
<tr>
<td>Urban (Ref)</td>
<td>1.069 1.021</td>
<td>0.864 0.831</td>
</tr>
<tr>
<td>Household size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 and more</td>
<td>0.948 0.899</td>
<td>0.484 0.462</td>
</tr>
<tr>
<td>4-6</td>
<td>0.987 0.950</td>
<td>0.898 0.869</td>
</tr>
<tr>
<td>1-3 (Ref)</td>
<td>1.066 1.021</td>
<td>0.864 0.831</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.898 0.852</td>
<td>1.197 1.283</td>
</tr>
<tr>
<td>Male (Ref)</td>
<td>1.054 1.017</td>
<td>0.734 0.834</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-25</td>
<td>0.987 0.950</td>
<td>0.898 0.869</td>
</tr>
<tr>
<td>26-49</td>
<td>1.066 1.021</td>
<td>0.864 0.831</td>
</tr>
<tr>
<td>50-64</td>
<td>0.948 0.901</td>
<td>0.882 0.830</td>
</tr>
<tr>
<td>65-99 (Ref)</td>
<td>1.054 1.017</td>
<td>0.734 0.834</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/never married</td>
<td>0.888 0.852</td>
<td>1.197 1.283</td>
</tr>
<tr>
<td>Divorced/separated/widowed</td>
<td>0.987 0.950</td>
<td>0.898 0.869</td>
</tr>
<tr>
<td>Married/living with partner (Ref)</td>
<td>0.812 0.757</td>
<td>0.882 0.830</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed elementary</td>
<td>0.943 0.870</td>
<td>0.189 0.176</td>
</tr>
<tr>
<td>Secondary-3-year Tertiary</td>
<td>0.987 0.911</td>
<td>0.435 0.406</td>
</tr>
<tr>
<td>Four years of over high school (Ref)</td>
<td>1.076 1.047</td>
<td>0.894 0.869</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>0.782 0.723</td>
<td>0.466 0.433</td>
</tr>
<tr>
<td>Out of workforce</td>
<td>0.928 0.887</td>
<td>1.138 1.181</td>
</tr>
<tr>
<td>Employed part-time</td>
<td>0.916 0.868</td>
<td>0.595 0.567</td>
</tr>
<tr>
<td>Employed full-time (Ref)</td>
<td>0.905 0.850</td>
<td>0.257 0.243</td>
</tr>
<tr>
<td>Per capita income quintile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poorest 20%</td>
<td>0.905 0.850</td>
<td>0.257 0.243</td>
</tr>
<tr>
<td>Second 20%</td>
<td>1.017 1.057</td>
<td>0.383 0.364</td>
</tr>
<tr>
<td>Middle 20%</td>
<td>1.058 1.016</td>
<td>0.493 0.469</td>
</tr>
<tr>
<td>Fourth 20%</td>
<td>1.091 1.027</td>
<td>0.647 0.615</td>
</tr>
<tr>
<td>Richest 20% (Ref)</td>
<td>1.155 1.063</td>
<td>0.564 0.539</td>
</tr>
</tbody>
</table>

Source: Data analysis of the Gallup survey, 2017
Table 8 shows the multinomial logistic regression results regarding the four levels of the FIES and receiving remittances: Apart from the four-level analyses of the FIES in the binary form, the four levels of the FIES all together were calculated with receiving remittances. Results of a multinomial regression analysis demonstrated that not receiving remittances increased the probability of severe food insecurity.

Table 8. Multinomial logistic regression analysis between the FIES (four levels) and receiving remittances (n=68,463)

<table>
<thead>
<tr>
<th></th>
<th>Receiving remittances</th>
<th>Odds ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe food insecure</td>
<td>Receiving remittances</td>
<td>No</td>
<td>1.421</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes (Ref)</td>
<td>1.288</td>
</tr>
<tr>
<td>Moderately food insecure</td>
<td>Receiving remittances</td>
<td>No</td>
<td>0.944</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes (Ref)</td>
<td>0.855</td>
</tr>
<tr>
<td>Mildly food insecure</td>
<td>Receiving remittances</td>
<td>No</td>
<td>0.868</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes (Ref)</td>
<td>0.790</td>
</tr>
<tr>
<td>Food secure (Ref)</td>
<td>Receiving remittances</td>
<td>No</td>
<td>1.421</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes (Ref)</td>
<td>1.288</td>
</tr>
</tbody>
</table>

Source: Data analysis of the Gallup survey, 2017

Table 9. Adjusted binary logistic regression analysis of receiving remittances and explanatory factors (n=68,463)

<table>
<thead>
<tr>
<th></th>
<th>Odds ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of residence</td>
<td>Rural</td>
<td>0.940</td>
</tr>
<tr>
<td></td>
<td>Urban (Ref)</td>
<td>0.862</td>
</tr>
<tr>
<td>Per capita income quintile</td>
<td>Poorest 20%</td>
<td>0.494</td>
</tr>
<tr>
<td></td>
<td>Second 20%</td>
<td>0.643</td>
</tr>
<tr>
<td></td>
<td>Middle 20%</td>
<td>0.692</td>
</tr>
<tr>
<td></td>
<td>Fourth 20%</td>
<td>0.787</td>
</tr>
<tr>
<td></td>
<td>Richest 20%</td>
<td>0.787</td>
</tr>
<tr>
<td>Education</td>
<td>Completed elementary</td>
<td>1.219</td>
</tr>
<tr>
<td></td>
<td>Secondary-3-year Tertiary</td>
<td>1.095</td>
</tr>
<tr>
<td></td>
<td>Four years of over high school (Ref)</td>
<td>0.944</td>
</tr>
<tr>
<td>Employment</td>
<td>Unemployed</td>
<td>1.536</td>
</tr>
<tr>
<td></td>
<td>Out of workforce</td>
<td>1.275</td>
</tr>
<tr>
<td></td>
<td>Employed part-time</td>
<td>1.498</td>
</tr>
<tr>
<td></td>
<td>Employed full-time (Ref)</td>
<td>1.343</td>
</tr>
<tr>
<td>Regions</td>
<td>Sub-Saharan Africa</td>
<td>0.757</td>
</tr>
<tr>
<td></td>
<td>Middle East and North Africa</td>
<td>0.537</td>
</tr>
<tr>
<td></td>
<td>Latin America and the Caribbean</td>
<td>0.628</td>
</tr>
<tr>
<td></td>
<td>Asia (southeast, south, and East)</td>
<td>0.735</td>
</tr>
<tr>
<td></td>
<td>Com. Wealth of Independent States (Ref)</td>
<td>0.610</td>
</tr>
</tbody>
</table>

Source: Data analysis of Gallup survey, 2017
In Table 9 we present adjusted models for the determinants of remittances: Apart from the factors associated with the food security level of the FIES, adjusted models, regardless of region, was calculated for the determinants of receiving remittances. Findings from the adjusted model indicated that the probability of receiving remittances decreased among households that belonged to the poorest 20% income quintile (OR=0.494; P=0.000). This is perhaps not surprising as migration is less likely among the poorest segments of populations compared to lower middle and middle income groups (Sirkeci, Cohen, Yazgan, 2012; Gonzalez-Konig and Wodon, 2005; Du et al., 2005; Stark and Yitzhaki, 1988).

Discussion and concluding remarks
Since little is known about the remittances and food security relationship, the main purpose of this study was to investigate the possible link between receiving remittances and individuals’ food security status in the Global South (GS) regions. Although there are some studies on different countries that explore the association between receiving remittances and food quality and quantity consumption or food consumption expenditure, this study is the first that considers the association between food security and receiving remittances through using the Food Insecurity Experience Scale (FIES) applied to the GS. As an individual-based index, this tool contains eight items with “yes” or “no” answers, focusing on the access dimension of food security and it was also validated by the Food and Agriculture Organization (FAO) in 2014 (Ballard et al., 2014).

Findings from descriptive analyses showed that Sub-Saharan Africa (SSA) has the highest prevalence of food insecure individuals compared to other regions. Results from this study are corroborated by previous studies reporting that 235 million people are chronically hungry in SSA. Regarding causes, many factors, such as climate change, farm productivity and access to soil amendments, labour availability and family income, influence food insecurity in SSA (Mendum & Njenga, 2018; Tumushabe, 2018). Conflicts and insecurity are among the primary drivers of food insecurity in Africa. In addition, climate disasters, specifically drought, are the major causes of food crises in Africa (Reliefweb, 2018). This is in line with the conflict model of migration (Sirkeci, 2009) which predicts higher levels of out migration in areas where perceived level of insecurity increases in response to conflicts and crises of any kind and intensity.

In Latin America and the Caribbean (LAC), although substantial progress has been made on the social and economic front (WB, 2018), large segments of the population (over 34 million people) still suffer from hunger, food insecurity, and chronic malnutrition (de
Moraes Sá et al., 2017). Results from this study confirm the findings of available studies and indicate that more than 20% of the sample from LAC reported being severely food insecure in 2017. Similar to SSA, factors such as climate change (which affects crop yields and local economies), persistent inequities in income distribution, and access to social protection are among the determinants of food insecurity in LAC (Chile, 2016; WB, 2018).

Available evidence has shown that remittances have significant positive effects on the food security status of developing countries (Szabo, Adger, & Matthews, 2018). For instance, Regmi and Paudel (2016) in their study focus on the impact of remittance income and how it contributes to alleviating food insecurity in the rural areas with severe hunger and poorer food consumption. Additionally, Perakis (2011) argues that regardless of the short-term or long-term effects, remittances improve food security status consistently. Notably, Combes and Ebeke (2011) argue that remittances decrease household consumption instability and function as a hedge against countries that face natural disasters, agricultural shocks, and banking crises. Further, receiving remittances can act effectively on households’ expenditures on food. Specifically, Adams and Cuecuecha (2010) found that remittance-receiving households had an 8.5 % increase in their average budget share in consumption expenditure on food (i.e., purchased or non-purchased foods) compared to non-remittance receivers. Receiving remittances promotes quantity and quality of foods and encourages people to consume more food and macronutrients (e.g., staple crops, meat, milk, and processed foods) (Durand, Parrado, & Massey, 1996). In developing countries, such as SSA countries, inflows of remittances contribute to at least 4% of the gross domestic product (GDP). This leads to a considerable slowdown effect on high food prices in household food consumption (Combes, Ebeke, Etoundi, & Yogo, 2012; Combes, Ebeke, Etoundi, & Yogo, 2014). Therefore, declining or dropping inflows of remittances to vulnerable countries can create an economic burden on people as well as governments (Chami, Hakura, & Montiel, 2009). In this study, regardless of region, a significant association was observed between receiving remittances and the food security status of individuals (both crosstabs and regression analyses) in the GS.

The findings of this study showed that not receiving remittances was significantly associated with severe food insecurity at the global level. Results from the adjusted models show that socio-demographic factors, such as the area of residence, education, employment status, and income quintile, were significantly related to food security. As a
result, this study found that receiving remittances seems to indirectly influence the food security status of individuals in the GS regions. The findings from this study have been corroborated by other available studies. Compared to urbanites, people in rural areas comprise most of the food insecure in developing countries (Smith, Kassa, & Winters, 2017). Low level of education contributes to food insecurity status (Bruening, MacLehose, Loth, Story, & Neumark-Sztainer, 2012). Being unemployed is among the determinants of food insecurity in a population (Birkenmaier, Huang, & Kim, 2016). Household food insecurity is explained by changes in the national unemployment rate as well (Nord, Coleman-Jensen, & Gregory, 2014). Income plays a considerable role in households’ food security status. Food secure households are less likely to provide an indication of any income-related problems (Tarasuk, Mitchell, & Dachner, 2016).

It should be noted that remittances are one of the most important factors contributing to the economic, social and political aspects of the lives of individuals in developing countries. The effects of remittances are seen on both the macro and micro levels. With respect to macro levels, remittances increase economic growth and gross domestic product (GDP), while reducing poverty and food insecurity in regions and countries receiving remittances. On the other hand, remittances, as a coping strategy, provide stable incomes for migrant relatives in their home countries by lessening financial constraints, smoothing consumption, encouraging investment, and supporting migrant relatives in times of economic shock and crises. Further, in line with the literature, receiving remittances seems to have a positive impact on income, human capital, social capital, agricultural production, and business/self-employment among individuals who receive them. The main purpose of this study was to investigate the linkage between receiving remittances and individuals’ food security status in the Global South (GS) regions. This is a pioneering study examining such relationship in GS countries using representative samples of individuals. Remittances, as part of the coping strategies in alleviating food insecurity, operate through providing stable incomes for families and affiliates left behind in countries of origin. However, it warrants further analysis treating this relationship in the context of selectivity of migration especially at the bottom of the income scalar.

References
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