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Is Uganda's progressive refugee policy equalizing the food security of national and refugee households?

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Uganda is the largest refugee hosting country in Africa and third in the world. The country operates a progressive refugee integration and self-reliance policy whereby refugees are allowed access to land and other productive resources. The effectiveness of this unique approach to refugee integration has not been empirically investigated. We estimate a multinomial logistic regression model to investigate whether the food security of refugee households is not significantly different from that of Ugandan nationals. We use cross sectional data collected in July 2019 from 2400 national and refugee households across 10 control and 10 World Food Program (WFP) intervention districts in Uganda using a randomized control trial (RCT) design. As we hypothesized, Ugandan citizenship together with size of land holding, livestock ownership and consumption of animal source food, marital status and geographical location enhance the food security of the household. However, our study found surprisingly that households currently receiving WFP support remain food insecure compared to those not receiving support, something we did not anticipate finding. Another surprising finding was that women headed households were more food secure than male-headed households across other socioeconomic parameters. Our findings hence suggest that in terms of equalizing the food security of refugees with that of Ugandan nationals, Uganda's progressive policy on refugees remains work in progress.

Keywords: food security, food consumption Score, progressive refugee policy, Uganda

Introduction

Uganda is seldom presented as a regional food basket in the Eastern Africa region and indeed a variety of food stuffs can be grown and found in most markets across the country. However, according to the National Planning Authority (NPA 2017), the depth of hunger in Uganda remains high. The NPA study specifically notes that an average of 4 in 10 Ugandans cannot meet the required daily food intake. On average, over the 7-year period of analysis (2009/10–2015/16) Ugandans consumed 1860 kcal of energy per day compared to the required intake of 2200 kcal per person per day (NPA 2017) falling short by 340 kcal of energy per person per day. Also, the dietary diversity score of Ugandans averaging 8.2 food groups falls short of the average recommended score of 9.2 food groups. This scenario clearly means that a significant focus of government policy and intervention programs need to be directed at addressing food insecurity.

Food security is defined as a state in which 'all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life' (USAID 1992). Food security can in principle be measured at national level using agricultural production data to generate per capita food consumption or dietary energy requirements. However, as noted by Knueppel *et al.* (2009), national food availability is unevenly distributed and although national level food stocks may be sufficient to meet the population's energy requirements, access to food is assumed to be less for refugee compared to national households. Access to food means that "individuals have adequate income or other resources to purchase or obtain levels of appropriate foods needed to maintain consumption of an adequate diet/nutrition level and are able to obtain these foods in socially acceptable ways (USAID 1992).

Uganda is the largest refugee hosting country in Africa and third largest in the World with an estimated total of 1.2 million refugees and asylum seekers mainly from South Sudan, Burundi and the Democratic Republic of the Congo (UNHCR UGANDA 2019). Uganda also presents a unique political framework for the refugee population living in the country, promoting refugees' self-reliance and favouring a development-based approach to refugee assistance; Food and Agriculture Organisation and Office of the Prime Minister (FAO and OPM 2018). This is what has been called the progressive Uganda refugee integration and self-reliance policy (Uganda model) whose underlying policy objective is to enhance the livelihoods of refugees and strengthen their food security at least up to the level of that of the nationals. Under this policy, refugees in Uganda are given land and mobility rights. They are also usually assumed to be more food insecure and continue to receive food aid as the main source of food (FAO and OPM 2018). Refugees are often assumed to be more food insecure because they are forced to be in a foreign land and arrive without prior adequate preparation for anything including physical food or resources to afford food. Hence, the receiving country

and other agencies provide them with food for sustenance. Empirical and rigorous studies on the food and nutrition security of refugees in sub-Saharan Africa are rare. In addition, the effectiveness of Uganda's celebrated progressive policy on refugees has not be empirically investigated. Part of this has to do with lack of adequate and statistically plausible data sets on refugees to support this kind of analysis as national bureaus of statistics rarely capture these data. Even the most recent and comprehensive World Bank Living Standards Measurement Study (LSMS) does not collect data on refugee households.

The measurement of food insecurity at household level aims to measure access to food as defined earlier and is based on the idea that the experience of food insecurity causes predictable reactions and responses that can be captured and quantified through surveys and summarized on a scale (Knueppel *et al.* 2009). Various matrices have been developed and used to measure food insecurity with varying merits and demerits. They include, the Cornell/Radimer measuring tool (Frongillo and Nanama 2006); an index of coping strategies (Wolfe and Frongillo 2001); the Household Food Insecurity Access Scale (HFIAS) (Coates *et al.* 2007); the reduced Consumption based coping strategy Index (rCSI) and the Dietary Diversity Score (Hoddinot and Yohannes 2002), among many others.

A few studies have examined the relationship between food security and refugee status of households. For example, Henjum *et al.* (2019) in their study in Norway among asylum seekers found that men had 4.08 times higher odds of experiencing adult food insecurity with hunger than women. They concluded that prevalence of food insecurity among asylum seekers in Norway was high, in contrast to low prevalence of food insecurity in the Norwegian population. Furthermore, a systematic review done by Lawlis *et al.* (2018) to understand the four dimensions of food security for settled refugees in Australia concluded that food insecurity adversely impacts refugee health and integration.

The purpose of the present analysis is therefore 2-fold: first to assess the effectiveness of Uganda's progressive policy on refugees by testing the null hypothesis that the food security of refugee households in not significantly different from that of Ugandan nationals and, second, to understand the predictors of household food security across different food security categories by region and gender. By investigating the predictors of food security across different food security categories by region and gender, it becomes possible to target interventions to specific regions, gender and household groups.

The article is structured as follows: Introduction, Methodology, Results and discussions and the last section presents the conclusion.

Methodology

Study Area

This study used a cross section survey of populations of individual smallholder farmer households in selected districts, sub-counties and villages targeted by the Agriculture and Market Support (AMS) program of the World Food Program

(WFP) and a control. In total, 20 districts were sampled comprised of 10 randomly selected WFP/AMS intervention districts and 10 matching control districts. Each of the intervention districts was matched with a control district carefully selected to be as homogenous as possible in terms of agroecology, ethnicity, farming systems and cultural habits except for the WFP/AMS interventions as elaborated below. The 10 intervention districts were Nakapiripiriti, Napak in the Karamoja region; Kyenjojo, Isingiro, Kakumiro and Kamwenge in the Western region and Omoro, Arua, Masindi and Kiryandongo in the Northern/West Nile region. The 10 control districts were Amudat and Moroto in the Karamoja region; Kabarole, Rwampara, Kibaale, Ibanda in the Western region and Nwoya, Maracha, Hoima and Buliisa in the Northern/West Nile region.

Data and Sources

The study employed a three-stage sampling procedure to select the sample of respondent households from the 20 districts in the three sub-regions. For the intervention group, respondent individual farmer households were randomly selected from the population of farmers targeted by the Agriculture and Market Support (AMS) program in each of the 10 sampled districts. The sample was drawn from a sampling frame of the current estimated population of 50 000 smallholders targeted by WFP during the current Country Strategic Plan (CSP) 2018–2022. The final statistically desirable sample size was determined using a standard statistical formula. With a margin of error of 3 per cent, the sample size for a finite population of 50 000 per year was calculated to be approximately 1065 supported farmer households.

For the 10 control districts, two sub-counties with the largest production of WFP target crops; namely maize, beans and sorghum, were purposively selected from each district. A village level sampling frame was constructed by listing all the villages in the two sub-counties. Subsequently, a random sample of either two or four villages was drawn from the village sampling frame to match the number of villages selected in the pair intervention district. A household sampling frame was then constructed by listing all the households in the two or four villages. Finally, a sample of 1065 control households was randomly selected for the study to match that selected for the intervention districts. Allowing for 5 per cent non-response rate, the final sample size was 1200 households for the 10 intervention districts and a matching 1200 households for the 10 control districts. Hence, the total sample size for both control and intervention districts was 2400 households. The questionnaire was programmed on PDAs, pretested and revised accordingly. Data were electronically captured, in July 2019, by a team of 44 trained enumerators aggregated into four teams. Each team was assigned a supervisor to ensure on spot data checks and quality assurance. Data were deposited on WFP servers with access rights by the research team. Data were cleaned and analysed using the STATA Econometrics program.

Empirical Model

The dependent variable used is the household food consumption score (FCS) (WFP, 2015) which is associated with household food access and is therefore, used as a proxy measure of household food security. The FCS belongs to the family of food consumption indicators designed to reflect the quantity and quality of people's diets. We then used the FCS to classify households into three groups namely; poor, moderate/borderline or acceptable food consumption household groups. These food consumption groups aggregate households with similar dietary patterns in terms of frequency of consumption and diversity and access to food. Poor food consumption defines those households that are not consuming staples and vegetables every day and never or very seldom consume protein rich foods such as meat or dairy products. Moderate/borderline consumption constitutes those households that are consuming staples and vegetables every day, accompanied by oil and pulse a few times a week. Acceptable food consumption defines households that are consuming staples and vegetables every day, frequently accompanied by oil and pulses and occasionally meat, fish and dairy products. Using adjusted thresholds, the food categories are obtained as poor food consumption (0–28); borderline food consumption (28.5–42) and acceptable food consumption (>42).

In addition to nationality (our variable of policy focus), we investigate a number of household, socioeconomic/demographic and regional factors predicted to influence the food insecurity status of households as explanatory variables. These include age of household head, educational level of household head (years of formal education) number of children in the household under 18 years of age, household size, household wealth score categorized into three wealth levels, household livestock wealth score (livestock species count) categorized into three groups, household consumption of animal sourced foods (ASF), geographical region (West versus North), sex of household head, land under cultivation by the household and marital status of the household head. A wealth index score (range 0–2) was created following the procedure elaborated in Bmjopen (2019) that grouped the households into three wealth categories. The higher the index, the wealthier the household. Likewise, a livestock index score (range 0–2) was computed based on the sum of the number of livestock assets with a higher score representing ownership of many livestock (see Knueppel *et al*. 2009).

We estimated a multinomial logit model that generalizes logistic regression to allow more than two discrete outcomes for the dependent variable. The categorical dependent variable, FCS $\boldsymbol{y}_i$ takes on three possible outcomes 0, 1 and 2 with the chosen outcome being defined as in equation one below (see Hilmer and Hilmer 2014).

$$y_i = \begin{cases} 2 \; if \; w_2 \geq max(w_1, w_0) \\ 1 \; if \; w_1 \geq max(w_2, \; w_0) \\ 0 \; if \; w_0 \geq max(w_2, w_{1)} \end{cases} \tag{1}$$

where $w_{0,}$ w_1 and w_2 are the multiple linear regression models for each of the three possible outcomes of the dependent variable; FCS.

The multinomial logit model transforms the specification in equation one into a likelihood function by the following calculation as specified in equation two.

$$P_r(y_i = h) = \frac{\exp(Z_h)}{1 + \sum_{j=0}^{J} \exp(Z_i)} \tag{2}$$

where h indicates the specific outcome being considered (i.e. $y_i = 0$, *or* $y_i = 1$, *or* $y_i = 2$ and j is a counting term indicating each of the possible outcomes with J being the highest possible outcome. In this case, j takes on three possible values, 0, 1 and 2 with $J =$ being 2.

Data Analysis

Estimated slope coefficients are calculated by maximizing the likelihood function in equation two using the STATA econometrics program. The test for the null hypothesis ($H_o : \beta \ =\ )$ on whether the food security of refugees is not significantly different from that of nationals focuses on the coefficient on the variable nationality of the household head. Rejecting the null hypothesis (that is, if the coefficient on nationality is found to be statistically distinguishable from zero), in favor of the alternative hypothesis ($H_A : \beta \neq 0$), implies that the food security of refugees is significantly different from that of nationals and that Uganda's progressive policy on refugees has not yet eliminated the gap between the food security of nationals and that of refugees.

According to Hilmer and Hilmer (2014), estimated slope coefficients indicating the log-odds ratio lack a simple intuitive economic meaning necessitating their conversion into estimated marginal effects (dy/dx) that should be interpreted. We therefore report average marginal effects for each independent (explanatory) variable. For continuous independent variables, we compute the marginal effects for each observation and then average these over the entire sample. For binary variables, marginal effects are computed as the difference between the predicted probability at 0 and the predicted probability at 1. These individual differences are then averaged over the sample.

Results

Descriptive Statistics of Sampled Households

The descriptive statistics of the variables used in modelling food security status of nationals and refugee households are presented in Table 1. We compare the key variables across Ugandan and refugee households. Independent sample t-tests of mean differences revealed that Ugandan household heads had significantly more land under cultivation than refugee households. On the other hand, refugee household heads had significantly more years of formal education, larger household size and more children under 18 years. Our results on land holding attest to fact that

Table 1.

Descriptive Statistics of Sampled Households.

Variable	Ugandans	Refugees	*t*-test statistics
Education of household head (years)	4.61 (3.97)	5.25 (4.28)	1.98*
Age of respondent (years)	43.57 (14.53)	41.82 (12.28)	−1.50
Household size	6.25 (2.64)	7.51 (3.90)	5.61***
Land under production (acres)	3.49 (6.36)	0.87 (0.93)	−5.27***
Number of children in the household less than 18 years	3.57 (2.09)	4.62 (2.75)	6.01***
Consumption of animal source foods	89588 (272171)	105065 (231243)	0.71
Binary variables	%	%	Chi^2 test
Sex of household head (1 = males, 0 = female)	70.8	52.4	24.10***
Household is from Western region (1 = yes, 0 = no)	40.1	46.3	2.47
Marital status (1 = married, 0 = otherwise)	83.8	65.2	35.7***
Household is in the treatment group	83.1	16.9	214.61***
Food security status			
Poor	15.2	26.80	
Borderline	36.7	39.0	
Acceptable	48.1	34.2	

Values in parentheses are standard deviations.
*Significant at 10 per cent; **significant at 5 per cent; ***significant at 1 per cent.

much as refugee households are given some land in Uganda, the amounts given might be still inadequate on account of government policy and land availability within the refugee hosting communities.

Chi-square tests of association revealed that Ugandan households were significantly more likely to have male headed households (70.8 per cent), and to be married either monogamously or polygamously (83.8 per cent) compared to refugee households. For Uganda in particular, the majority of refugees would be households fleeing war and insecurity after losing a male head of the household in their countries of origin. In addition, a higher proportion of the Ugandan nationals were more likely to be in the higher quantile for both wealth and livestock and also consumed more animal source foods (ASF). These results are similar to those found by Henjum *et al.* (2019) in a study done in Norway among asylum seekers in which 7 per cent of the participants were categorized as food secure and 93 per cent as food insecure, of whom 11 per cent were food insecure without hunger, 78 per cent were food insecure with hunger and 4per cent were food insecure with child hunger.

Table 2.

Estimated Marginal Effects from Multinomial Logistic Regression Predicting Food Security Status of Households.

Explanatory Variable	Borderline FCS (dy/dx)	Acceptable FCS (dy/dx)
Nationality of household head (1 = Ugandan, 0 = refugee)	−0.0687	0.120**
	(−0.0464)	(−0.0498)
Land under production (years)	−0.0057	0.0159***
	(−0.0043)	(−0.0045)
Consumed animal source foods	−3.48e−07***	4.66e−07***
	(0.0000)	(0.0000)
Wealth index score level 1 (level = 1, 0 = otherwise)	−0.0084	−0.105***
	(−0.0353)	(−0.0371)
Livestock index score 2 (Score 2 = 1, 0 = otherwise)	0.0104	−0.0511*
	(−0.0282)	(−0.0295)
Treatment dummy 1 = Treatment group; 0 = Control group	−0.0649***	0.0261
	(−0.0235)	(−0.0244)
Sex of household head (1 = male, 0 = Otherwise)	0.0416	−0.0672**
	(−0.0301)	(−0.0315)
Marital status of household head (1 = Married, 0 = Otherwise)	−0.0899**	0.0988***
	(−0.03550)	(−0.0381)
Region dummy 1 = West; 0 = North	−0.0005	0.0533**
	(−0.0238)	(−0.0251)
Age of household head (years)	−0.0005	0.0004
	(−0.0008)	(−0.0009)
Education of household head (years)	0.0005	−0.0012
	(−0.0033)	(−0.0035)
Number of children in the household less than 18 years	−0.0012	−0.0071
	(−0.0104)	(−0.0110)
Household size	−0.0002	0.0034
	(−0.0084)	(−0.0089)
Wealth index score level 2 (level 2 = 1, 0 = otherwise)	−0.0064	−0.0448
	(−0.0292)	(−0.0305)
Livestockv index score 1 (Score 1 = 1, 0 = otherwise)	0.0109	−0.0314
	(−0.0273)	(−0.0285)

Values in parentheses are standard errors. Dependent variable is Food Consumption Score (FCS). Wealth index score level 3 is the omitted (base) category and livestock index score 3 is the omitted (base) category.
*Significant at 10 per cent; **significant at 5 per cent; ***significant at 1 per cent.

Regression Results

Results of multinomial logistic regression analyses with the poor consumption score as the omitted (comparison/base) category are presented in Table 2.

From Table 2, the results reveal that relative to poor FCS (the omitted category), Ugandan nationals are significantly more likely than refugee households to have an acceptable food diet with a probability of 12 per cent. With regard to the other predictors of household food security, compared to demographic and agroecological factors, the weight of the evidence is in favour of socioeconomic factors such as access to land, consumption of ASFs, wealth index, livestock index) as the key drivers of household food security for both national and refugee households. These suggest that relative to poor FCS (the omitted category), households with more land under production are significantly more likely than households with less land under production to have acceptable food diets with a probability of 1.6 per cent. Furthermore, relative to poor FCS (the omitted category), households that consume ASFs are significantly more likely to achieve acceptable diets, although with a very small probability.

The other three significant socioeconomic variables were wealth index score level 3, livestock index score 3 and treatment (accessing WFP interventions). Relative to poor FCS (the omitted category), households in the wealth index of level 3 (base category) are significantly more likely to have acceptable food diets than those with a wealth index score of level 1 with a probability of 10.5 per cent. Further, relative to poor FCS (the omitted category), households in the livestock index of level 3 (base category) are significantly more likely than households in livestock index score 2 to have acceptable food diets with a probability of 5.1 per cent. Control households (not receiving WFP interventions) are significantly more likely than treatment households to attain borderline food diets with a probability of 6.5 per cent.

Sex and marital status of the household head were the only demographic factors found important predictors of household food security measured by the FCS. Relative to poor FCS (the omitted category), women headed households are significantly more likely than male headed households to have acceptable food diets with a probability of 6.7 per cent. Meanwhile households headed by married heads are significantly more likely than households headed by unmarried heads to have acceptable food diets with a probability of 9.9 per cent. These results are in contrast to those found by Henjum *et al.* (2019) which showed that men had 4.08 times higher odds of experiencing adult food insecurity with hunger than women.

The only agro-ecological variable included in the model and found significantly associated with household food security was geographical location of the household. Relative to poor FCS (the omitted category), households in western Uganda are significantly more likely than households in northern Uganda to have acceptable food diets with a probability of 5.3 per cent.

Discussion

Our analysis generally found that the food security of Ugandan nationals was significantly higher than that of refugee households. This is largely consistent with the conventional view and findings of other studies on refugees. In a recent study, FAO and OPM (2018) used descriptive statistics to compare the food security of refugees and that of host community households over nine food security indicators. These were Shannon index, Simpson index, FCS, Household Dietary Diversity Score, monthly food consumption per capita (USD), Monthly food expenditure per capita (USD), monthly food from own consumption per capita (USD), monthly food from assistance per capita (USD) and caloric intake per capita. The study found that for the first seven indicators, the mean values were significantly higher ($p < 0.01$) for host community households compared to refugee households. It was only for the calorie intake per capita indicator where the mean values were not significantly different between refugee and host community households. As expected, the value for monthly food received from assistance per capita (USD) was significantly ($p < 0.01$) higher for refugee households. Regression results of this study are consistent with the FAO and OPM (2018) descriptive results confirming that a larger proportion of Ugandan national households are in the higher wealth and livestock score categories compared to refugee households.

The results suggest that the twin factors of Ugandan nationality and size of land holding reinforce each other to bolster household food security in the study area. Ugandan nationality accords the household access to more productive resources including land than refugee households. Indeed, the result suggest that having access to land and putting more of it into production greatly enhances the food security of the household. This result is consistent with the findings of FAO and OPM (2018) noting that for refugees one of the main challenges is secure access to land whereas for host communities it was secure access to water for production. The same FAO and OPM (2018) analysis also found that refugees were less resilient than host communities partly on account of low levels of access to productive assets such as land for cropping and livestock rearing.

The findings of the present study suggest that consumption of ASF is associated with achievement of acceptable food diets. Our findings concur with previous studies that show greater consumption of ASF among households that were more food secure ((Knueppel *et al.* (2009) and Hadley *et al.* (2007)). In sub Saharan Africa setting, livestock ownership also serves as a good proxy indicator of the wealth of the household and wealthier households tend to have more secure levels of household food. For similar reasons, households in wealth index score levels one and two have significant coefficients predicting a higher likelihood of being in poor FCS (vs. acceptable FCS) relative to households in wealth index score level three. Many other studies have found a significant association between food insecurity status and wealth status (Knueppel *et al.* 2010). The same holds for the livestock index score in the sense that households with livestock index score at levels one and two are predicted to have a significantly higher likelihood of being

in poor FCS (vs. acceptable FCS) than households in livestock index score level three. This result however, deviates from the findings of Knueppel *et al.* (2010) who found household livestock wealth score not significantly correlated with household food security status in Tanzania. The reason for lack of significance might be partly explained by the fact that Knueppel *et al.* (2010) had their livestock wealth score overly disaggregated with 13 categories ranging from 0 to 12. The present analysis suggests that the three household level variables including wealth, livestock ownership and consumption of ASF may be reinforcing each other to bolster the food security status of the household. Households not receiving WFP support (control households) have comparatively better levels of food security largely for the same reason of nationality that enables them better access to productive resources including land (FAO and OPM 2018). The findings are also in line with those of Henjum *et al.* (2019) who concluded that the prevalence of food insecurity among asylum seekers in Norway was high, in contrast to low prevalence of food insecurity in the Norwegian population.

On marital status, married household heads are significantly more likely to have acceptable food diets perhaps owing to the advantages of shared responsibility and joint decision making. This finding is consistent with who found age and marital status to be significantly and positively correlated with food insecurity. This study found women classified as food insecure likely to be older, separated, divorced or widowed. This is probably due to their limited access and ownership of productive resources such as land and capital that are necessary for production of food or purchase of food. These results are in tandem with those obtained from a systematic review done by Lawlis *et al.* (2018) to understand the four dimensions of food security for settled refugees in Australia that concluded that food insecurity adversely impacts refugee health and integration.

At a regional level, it is no surprise that households in western Uganda are significantly more likely than households in northern Uganda to have acceptable food diets. The western region of Uganda is more endowed in terms of rainfall and agroecology with some places having the capacity for three cropping seasons in a year. Meanwhile much of northern Uganda is at a lower altitude with a dryer climate. In some places like the Karamoja region, only one cropping season is possible in a year. Nevertheless, food security is not congruent with nutrition security as demonstrated by a study by Kikafunda *et al.* (2014) who showed that western Uganda had persistently registered high levels of childhood malnutrition despite being referred to as 'the food basket' of the country. This was partly explained by the fact that households in northern Uganda tend to adopt richer food cooking habits and are more willing to accept diverse foods and ingredients in their menu.

Conclusion

Uganda's progressive refugee integration and self-reliance policy whereby refugees are allowed access land and other productive resources has been in place for a while now. However, food insecurity remains a big problem between the refugees

and national households. Hence, this study investigates using a multinomial logistic regression, the effectiveness of this policy given the limited empirical evidence available. We use cross sectional data collected in July 2019 from 2400 national and refugee households across 10 control and 10 intervention districts in Uganda using a randomized control trial (RCT) design as part of the WFP baseline study. We find that socioeconomic factors such as access to land, consumption of ASFs, wealth index, livestock index, marital status and agro-ecological variable such as geographical location of the household are important factors that significantly influence the food security situation of refugee and national households.

As we suspected, Ugandan citizens are more food secure due to their citizenship and nationality. However, our study found surprisingly that households currently receiving WFP support remain food insecure compared to those not receiving support, something we did not anticipate finding. Another surprising finding was that women headed households were more food secure than male headed households across other socioeconomic parameters. Our findings hence, suggest that in terms of equalizing the food security of refugees with that of Ugandan nationals, Uganda's progressive policy on refugees remains work in progress.

There is need for more data and analysis to further these findings and be able to assess how much the policy has achieved and how much remains to be done to achieve the goal of eliminating the food security gap between refugee and national households. The fluidity of the refugee situation that entails returnees and new arrivals further complicates the envisaged analysis as does variation in access to land across the different refugee hosting communities. Furthermore, this study did not examine the other policy objectives of the Uganda model that includes peaceful coexistence, refugee integration into the local economy and enhancing resilience. Beyond nationality, household level socioeconomic factors and agro-ecology are other key predictors of the food security status of the household.

Authors' Contributions

BB, RIE and MY had a significant role in the design and implementation of the study. RIE and BB jointly cleaned, processed and analyzed the data. BB led the drafting of the manuscript and had primary responsibility for the final content. All authors have read and approved the final manuscript.

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