Do Remittances Alter Household Nutrition? Evidence from Rural Kilimanjaro in Tanzania

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Selected Poster prepared for presentation at the Agricultural & Applied Economics Association's 2014 AAEA Annual Meeting, Minneapolis, MN, July 27-29, 2014.

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INTRODUCTION

- Remittances are a major source of external development finance providing households with income for investment, insurance and capital accumulation (Chami, et al., 2003; World Bank, 2004; Yang, 2008).
- According to the Migration and Remittance Fact Book (2011), Tanzanians living outside the country in 2010 were equal to 0.7 percent of Tanzanians living within the country. The majority of Tanzanian migrants reside in Australia, Burundi, Canada, Kenya, Malawi, Mozambique, Rwanda, Uganda, United Kingdom, and United States. Remittances by Tanzanians abroad amounted to an estimated US$ 337 million (Tshs 539.2 billion) in 2010, an increase of six percent from US$ 318 million in the previous year (Tanzania Central Bank Statistics, 2011).

Objective of the Study

- To determine if remittance income makes a difference in the macronutrients and micronutrients consumption patterns of households.

Literature on the Income Elasticity of Nutrients

- Low nutrient intake is widespread among rural low income households in developing countries. The prevalence of undernourishment in Tanzania is high estimated at 39% of the population in 2012 (WFP, 2012).
- Estimates of the income elasticity of calories in developing countries is high, ranging from close to zero to close to one (Abdulai and Aubert, 2004).

METHODOLOGY

Empirical Framework

Data

- Utilizes data from 2008-2010 Kilimanjaro Livelihood and Climate Survey (KLCS).
- Fifteen villages were surveyed with fifteen households randomly selected from each village, making up a sample of 225 respondents.
- The survey contains information on household consumption quantities, total expenditure data on food and nonfood commodities, and demographic characteristics for each sampled household.
- The consumption data includes consumption from own production, consumption from purchases and consumption from in-kind transfers from other households.

Model

- We estimate a regression model of household per capita nutrient intake:

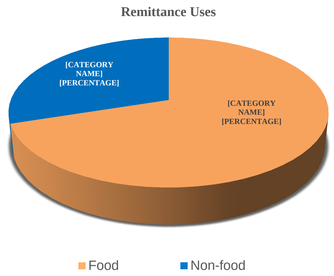
$$C_{it} = \alpha_0 + \beta_1 H_{it} + \beta_2 R_{it} + \beta_3 Y_{it} + \beta_4 V_{it} + \varepsilon_{it}$$

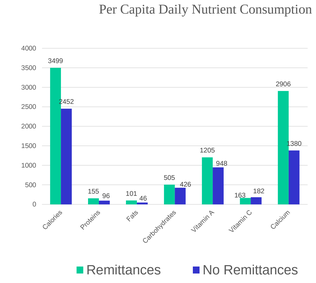
where C_{it} is per capita nutrient intake of household i at time t, α_0 is a fixed effect reflecting time differences, H_{it} represents household characteristics, R_i is a dummy variable for remittances, V represents village level characteristics, and ε is the error term. β_1, β_2, β_3, and β_4 are parameters to be estimated.

Estimation Procedure

- Remittance and net income could be endogenous since unobservable characteristics that affect migration and, hence, remittances may also affect household nutrient intake. There may be reverse causality as high nutrient consumption might bring better health, affecting the probability either positively or negatively that a member will migrate and hence send remittances back home.
- To overcome this problem, an Instrumental Variable (IV) approach is used which employs instruments that affect migration and, hence, remittances but that do not directly affect household nutrient intake.

Descriptive Statistics





Characteristics	Pooled Sample (N=221)	Received Remittances (N=119)	Did not Receive Remittances (N=102	T-test of Mean Differences
Household Size	5.2	4.8	5.6	2.6**
Age of Head (years)	55.3	60.1	49.8	-5.5***
Age of Spouse (years)	49.6	54.1	44.5	-5.2***
Educ. of Head (years)	6.7	6.2	7.2	2.2*
Educ. of Spouse (years)	6.0	5.2	2.7	3.8***
Farm Size (acres)	2.4	2.7	2.1	-2.5***
Net Annual Income (Tshs)	276117 (665432)	258740 (671006)	296392 (296392)	0.4

Econometric Results

Variables	Calories	Proteins	Fats	Carbo-hydrates	Vit. A	Vit.C	Calcium
Remittances (instrumented))	+	+	+	+	+	+	+
Head, 1-5 years of education	+	+	-	+	+	-	+
Head, 6-9 years of education	+	+	-	+	+	-	+
Spouse, >10 years of education	+	+	+	+	+	+	+
Age of head (ln)	-	-	-	-	-	+	-
Household size (ln)	-	-	-	-	-	-	-
Farm size	-	-	+	-	+	-	-
Moshi town	+	+	+	+	+	+	+
Another village	+	+	+	+	+	+	+
Income (instrumented)	+	+	+	+	+	-	+
Constant	+	+	+	+	+	+	+

Red signs imply significance, grey signs imply lack of significance.

DISCUSSION

- Remittance coefficients are positive and significant for the highest-quality nutrients: proteins, vitamin A, vitamin C and calcium.
- Remittance coefficients are not significant for the lowest-quality nutrients: calories, carbohydrates and fats.
- Holding everything else constant, households that received remittances consume 183 percent more protein per capita than households that do not receive remittance. The coefficient is significant at the five percent level.
- Households that received remittances consumed 47 percent more fats per capita than non-remittance receiving households.
- Age of head, household size and farm size all had negative and significant coefficients.

CONCLUSION

- Various authors have found that remittances received by home-country recipients are used either for investment in housing, businesses, consumption of nonfood items or for insurance against risks (Adams, 1991; Miller and Paulson, 2000), however our study finds that remittances are useful in poor rural households for boosting nutrition first and foremost.
- The study finds that remittances improve household nutrition and, hence, food security.
- Remittances are invested in human capital in the form of higher quality nutrients such as protein. This leads to better cognitive development and health.
- We find a negative relationship between ownership of farmland and nutritional levels but this effect can be offset by remittances.

REFERENCES

- Abdulai, A., and D. Aubert. 2004. “Nonparametric and Parametric Analysis of Calorie Consumption in Tanzania.” *Food Policy* 29(2): 113–129.
- Adams, R.H., Jr. 1991. "The Effects of International Remittances on Poverty, Inequality, and Development in Rural Egypt." Research Report 86, International Food Policy Research Institute (IFPRI).
- Chami, R., C. Fullenkamp, and S. Jahjah. 2003. "Are Immigrant Remittance Flows a Source of Capital for Development?" IMF Working Papers 03/189, International Monetary Fund, Washington, D.C.
- Miller, D and A. Paulson. 2000. "Informal Insurance and Moral Hazard: Gambling and Remittances in Thailand," Econometric Society World Congress 2000, Contributed Papers 1463, Econometric Society.
- Tanzania Central Bank Statistics. 2011. *Analytical Report*, Dar es Salaam, Tanzania.
- World Food Program. 2012. “The State of Food Insecurity in the World 2012. Economic Growth is Necessary but not Sufficient to Accelerate Reduction of Hunger and Malnutrition.” Rome, Food and Agriculture Organization.
- World Bank. 2004. “Enhancing the Developmental Effect of Workers’ Remittances to Developing Countries,” Global Development Finance Report 2004, World Bank, Washington, D.C.
- Yang, D. 2008. "International Migration, Remittances and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks." *Economic Journal, Royal Economic Society* 118 (528):591-630.