Do Off-farm Income and Remittances Alter Household Food Consumption Patterns? Evidence from Albania

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Introduction

- Rural households typically diversify their income by working off the farm and/or by sending some members away as migrant workers.

- These income diversification strategies may have implications not only for household's production decisions, but also for food consumption patterns.

- Expenditure shares of different food groups may be affected differently depending on the source of the income; thus, an aggregated income variable may conceal their relative significance in farm households' food security status.

Introduction

- Off-farm work and migration may
    - decrease vulnerability in food consumption fluctuations.
    - increase subsistence food consumption by relaxing liquidity and credits constraints and helping with productivity-enhancing investments on the farm
    - decrease subsistence food consumption if farm labor lost to non-farm work is not replaceable.
    - decrease food consumption expenditures by encouraging increased nonfood consumption.

- While plenty has been written on the productivity effects of off-farm income sources in Albania, few studies have analyzed their impacts on food consumption.

Objectives

- We examine the impact of off-farm labor reallocation decisions on food consumption patterns and food security in Albania.

- We consider both *local non-farm income* (wage income and self-employment income), and *migratory non-farm income* (i.e. remittances).

- We ask if farm households' access to local off-farm incomes and remittances have different impacts on their food consumption patterns?

  - Do they eat more at home (FAH) or away from home (FAFH)?
  - Conditional on at-home food expenditures, which nutritional food groups are impacted the most by changes in off-farm incomes?

Literature - Local non-farm income and food consumption

- Positive effect of local non-farm income on food consumption:
  - Reardon, Matlon, and Delgado (1992) for Burkina Faso, Ruben and van den Berg (2001) for Honduras, Babatunde and Qiam (2010) for Nigeria, Owusu, Abdulai and Abdul-Rahman (2011) for Ghana, Mishra, Mottaleb and Mohanty (2015) for Bangladesh, Seng (2015) for Cambodia.

- Other results on local non-farm income and household food consumption:
  - Chang and Mishra (2008) for U.S: Spouse's participation decreases food consumption expenditures.
  - Chang and Yen (2011) for Taiwan: Farm operator's participation increases FAFH, spouse's participation decreases FAFH.

Literature - Remittances and food consumption

- Castaldo and Reilly (2007) for Albania: Higher the international remittances, lower the food budget share.
- Adams and Cuecuecha (2010) for Guatemala: International remittances –>lower food expenditures, internal remittances –>higher food expenditures.
- Karamba, Quiñones and Winters (2011) for Ghana: No effect on per capita food consumption expenditures, but moves consumption towards less nutritious food categories, such as sugar and FAFH.
- Azzarri and Zezza (2011) for Tajikistan: International remittances lead to higher calorie intake in children.
- Nguyen and Winters (2011) for Vietnam: Short term vs long term internal migration. Only short term internal migration has positive effects on food consumption, caloric intake, and food diversity.

Contribution

- This paper differs from other related work on two fronts:
  - We consider *remittances* as a non-farm income and evaluate impact of *local* and *migratory* off-farm income simultaneously.
  - We use continuous off-farm income variables in the analysis rather than a binary variable indicating whether the household has a non-farm income.

- To the best of our knowledge, ours is the first comprehensive analysis of the impact of a portfolio of local non-farm incomes and remittances on food consumption patterns in Albania.

- Empirical results will be relevant for policymakers designing poverty and nutrition programs.

Food Security Profile of Albania

- Overall improvement in nutrition and food security situation in Albania over the last decade.

  - Decrease in the stunting and wasting rates from 32% and 11% in 2000 to 16% and 7% in 2008/2009 among children under five years old, respectively (INSTAT and IPH 2010).
  - The percentage of underweight children decreased from 14% in 2000 to 6% in 2008/2009 (INSTAT and IPH 2012).

- Despite improvements at the national level, more than 400,000 rural Albanians suffer from some form of malnutrition (Bagriansky, 2010). This contrasts sharply with the high rates of obesity in the urban areas.

Food Security Profile of Albania

- Albania is one of the poorest countries in Europe with a Human Development Index (HDI) of 0.716, ranking it 95th in the world in 2013 (UNDP 2014).
- Higher poverty in the coastal, central, and mountainous regions of Albania. These form the rural heartland of Albania.
- Access to cash-based sources of income is the main factor affecting food security (INSTAT and IPH 2012).

# Poverty headcount by region in Albania, 2002–2012
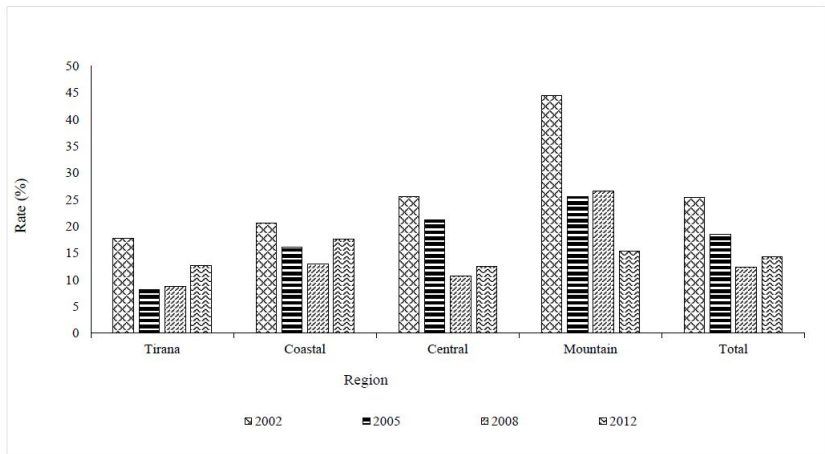
Data

- Data on 1383 rural farm households from the 2005 Albanian Living Standard Management Survey (ALSMS05) and Rural Income-Generating Activities (RIGA) databases.

- Both RIGA and ALSMS05 maintain unique household ID, which makes cross-referencing possible.

- Two main *local off-farm income* sources: (1) wage income, and (2) self-employment income.

- The *migratory off-farm income* includes international and internal remittances by migrant household members.

Data

- The food consumption data were collected by means of a 14-day diary.

- The diary contains information on 1-) purchased food items, 2-) non-purchased food items (own produced and received as gift), 3-) bulk purchases before the reference period, and 4-) food consumed away from home. The first three are classified as FAH, and the latter as FAFH.

- Two-stage budgeting: 1st stage -) three broad categories of goods; 2nd stage-) six detailed sub-categories of food.

Two-stage Budgeting
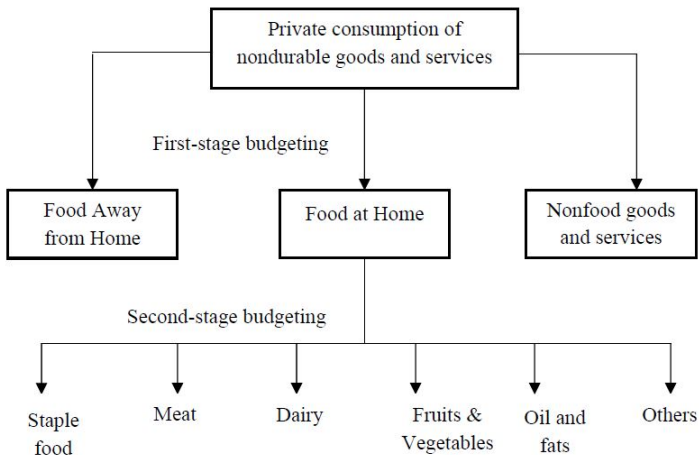
Off-farm activity participation rates and incomes by food expenditure quintiles

Quintiles	1	2	3	4	5	Total
Participation rates						
Any off-farm	0.56	0.58	0.66	0.76	0.77	0.62
Local						
Wage employment	0.23	0.30	0.32	0.37	0.33	0.28
Self-employment	0.08	0.09	0.10	0.12	0.16	0.10
Migratory						
Remittances	0.34	0.34	0.39	0.44	0.48	0.38
Incomes						
Any off-farm	148.73	172.67	237.85	267.02	359.89	223.04
Local						
Wage employment	65.33	80.85	108.54	136.31	131.52	95.59
Self-employment	38	59.51	82.03	80.69	158.36	77.82
Migratory						
Remittances	45.4	32.31	47.27	50.02	70.01	49.63

Income in 1000 Albanian Leks.

Mean differences in expenditure shares by off-farm work participation

Variables	Overall	Off-farm	No off-farm	t-value
first-stage budgeting				
Food	0.72	0.76	0.71	-6.25***
FAH	0.70	0.68	0.75	-7.31***
FAFH	0.02	0.03	0.01	4.90***
Nonfood	0.28	0.29	0.24	6.25***
second-stage budgeting				
Cereals	0.18	0.17	0.19	-2.50***
Meat	0.19	0.21	0.17	5.50***
Dairy	0.23	0.21	0.25	-5.78***
Fruits and vegetables	0.22	0.23	0.21	2.68***
Fats and oil	0.11	0.11	0.12	-2.54***
Others	0.07	0.07	0.06	2.52***
Observations	1383	864	519	

Empirical Framework

- Two-stage budgeting with weak separability on the household's preference structure.
- In the first stage, household allocates total expenditures, C, among FAH, FAFH, and nonfood expenditures:

$C_j = \varphi(Y_F, Y_i, A : \tau),, \qquad j = FAH, FAFH, TNF$
Y_F, Y_i, A, τ represent farm and off-farm incomes, nonlabor income, and household and community-level variables, respectively.

- In the second stage, household further allocates FAH expenditures among food subgroups—cereals, meat and fish, milk and dairy products, fruits and vegetables, fats and oil, and "other FAH".

$C_k = \psi(Y_F, Y_i, A : \tau),, \qquad \text{for } k = 1, 2, .., 6$

Empirical Framework

- We use Working-Leser model (1943,1963), which relates budget shares of commodities to the log of total expenditures, to empirically estimate these relationships.

$$w_j = a_{0j} + b_j \log(E_1) + \gamma_j X, \qquad \text{for } j = 1, 2, 3$$
$$w_k = a_{0k} + b_k \log(E_2) + \gamma_k X, \qquad \text{for } k = 1, 2, ..., 6$$

where, $w_j = C_j / C$ is expenditure share of good j ; E_1 is total expenditures at the first-stage budgeting. Similarly, $w_k = C_k / C_{FAH}$ is the share of FAH expenditures on commodity k; E_2 is the total FAH expenditures. X includes household and community characteristics.

Empirical Framework

- Farm and non-farm incomes (including remittances) enter the Working-Leser model through expenditures, E_1 and E_2 :

$$E_1 = \alpha_0 + \alpha_1 X + \alpha_2 Z,$$

$$E_2 = \beta_0 + \beta_1 X + \beta_2 Z,$$

where, $Z = [Y_F, Y_i, A]$ is a vector of income variables, and X is vector of household and community characterictic variables.

Econometric Issues

- Potential measurement error issue: "Consumption" may differ significantly from its measured counterpart, "expenditure", causing bias in estimates. Non-farm income variables were used as instruments in E_1 and E_2 equations to overcome this (Blundell and Duncan (1998)).

- Zero food consumption away from home: Censoring in FAFH expenditure shares was addressed using a flexible two-step procedure (Su and Yen 2000; Yen, Khan and Su 2002).

- Endogeneity of off-farm income variables (including remittances): Instruments: a-)district off-farm employment rate in 2001, b-)proportion of district population between 15–64 years in 2001 for local non-farm income variables, and c-) whether a household member could speak Greek/Italian in 1990 for remittances variable.

Estimation Strategy

- First, estimate determinants off-farm incomes, Y_i, including instrumental variables with a tobit model to generate their predicted values, $\hat{Y}_i$.
- Then, use $\hat{Y}_i$ in place of their observed values, and estimate E_1 and E_2 equations to generate $log(\hat{E}_1)$ and $log(\hat{E}_2)$ in per adult equivalent.
- Use $log(\hat{E}_1)$ and $log(\hat{E}_2)$ in Working-Leser model to estimate the first and second stage expenditure share equations.
- Compute elasticities of expenditure shares with respect to different off-farm income levels by differentiating w_j and w_k with respect to $log(\hat{E}_1)$ and $log(\hat{E}_2)$and, respectively.
- There is loss of efficiency due to the use predicted values. Thus, we bootstrap to obtain robust standard errors of our elasticity estimates.

First-stage budgeting: Expenditure share elasticities with respect to incomes

	FAH	FAFH	Non-Food
Elasticities with respect to:			
Total expenditures	0.960***	1.145***	1.100***
Off-farm Incomes			
Wage employment	-0.003	2.428***	0.007
Self-employment	-0.001	0.800	0.002
Remittances	0.001	-0.958*	-0.003

First-stage budgeting: Expenditure share elasticities with respect to incomes

Elasticities with respect to:	FAH	FAFH	Non-Food
Household Characteristics			
Female household (HH) head	0.003*	0.013	-0.007*
Age of HH head	-0.041	-0.218	0.113
Married HH head	0.021	0.127	-0.062
Education of HH head	-0.078***	0.257*	0.154***
No. children	0.010	-0.120**	-0.017
No. adults	-0.031*	-0.344***	0.106**
Community Characteristics			
HH is in Coastal region	-0.010**	0.021	0.024**
HH is in Mountain region	-0.028***	0.066	0.057***

Second-stage budgeting: Expenditure share elasticities with respect to incomes

Elasticities with respect to:	Cereals	Meat & fish	Milk & dairy	FV	Fats & oil	Other FAH
Total FAH expenditures	0.541***	1.035***	1.348***	1.030***	0.872***	1.056***
Off-farm Incomes						
Wage employment	-0.038***	0.124	-0.274	0.257	-0.598**	0.869***
Self-employment	-0.006	0.020	-0.044	0.041	-0.095	0.139
Remittances	0.019***	-0.063	0.140	-0.131	0.305**	-0.443**

Second-stage budgeting: Expenditure share elasticities with respect to other variables

Elasticities with respect to:	Cereals	Meat & fish	Milk & dairy	FV	Fats & oil	Other FAH
Household Characteristics						
Female household (HH) head	-0.003	0.001	-0.003	0.009***	-0.007*	0.001
Age of HH head	0.049	0.007	-0.129*	0.029	0.065	0.093
Married HH head	-0.064	0.037	-0.031	0.047	0.030	-0.017
Education of HH head	-0.060**	0.153***	-0.074**	0.013	-0.059*	0.064
No. children	0.017	-0.072***	0.074***	0.002	-0.051***	-0.027
No. adults	-0.014	-0.014	0.155***	-0.070**	-0.086**	-0.092**
No. elderly adults	0.022*	0.023	-0.011	-0.017*	-0.024*	0.008
Community Characteristics						
HH is in Coastal region	-0.012	0.050***	-0.035***	0.015*	-0.009	-0.013
HH is in Mountain region	-0.007	-0.073***	0.047***	-0.019*	0.016	0.083***

Summary and Conclusions

- With a nationally-representative micro-level data, we analyze the impact of a portfolio off-farm incomes—wage income, self-employment income and remittances—on food consumption patterns in rural Albania using Working-Leser framework with the undelying assumption of two-stage budgeting.

- Overall, we find that off-farm wage income and remittances, among three sources of off-farm income we considered, have significant impacts on household food consumption patterns in rural Albania.

Summary and Conclusions

- Income from off-farm wage employment has a positive and significant marginal impact on the budget share of food consumed away from home.

- This finding may reflect changes in rural Albanian households' food preferences due to wealth effects, or the opportunity cost of time associated with eating at home while holding multiple jobs.

- Remittances, on the other hand, lead to a decrease in the budget share of food consumed away from home.

- This may be because migration in Albania is typically undertaken by poorer households with higher income risk. These households likely allocate their remittances on farm or non-farm investment rather than eating more away from home.

Summary and Conclusions

- Off-farm wage income is associated with significant reduction in budget shares of high-calorie food groups—cereals, and fats and oil. The impact on more nutritious food groups such as meat and fish, and fruits and vegetables is positive, but statistically insignificant.

- Remittances generate the opposite effects on food consumption and encourage consumption of high-calorie food at home .

- Our results on remittances suggest that migrant-sending households need specific programs that will assist them in making healthier (and, more diverse in macro nutrients and perhaps less calorie-dense) meals at home.

Future Work

- Check for robustness of elasticity estimates given different instruments and/or explanatory variables.
- Estimate seperate effects of internal versus extenal remittances on food consumption patterns.