



Farmers' Integration in Agriculture Value Chains and the Role for Food Insecurity

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Introduction

- In Tanzania, 80% of the population relies on agriculture for their livelihoods.
- Small-scale farmers with surpluses need the ability to access markets in order to increase their income and hence food security (World Bank 2008).
- The **objective** is to explore the livelihood strategies of small-scale farmers based on their vertical and horizontal market integration and assess the impact on food insecurity and welfare status in rural Tanzania.

Theory

- Linking small-scale farmers to markets is assumed to improve welfare and increase their utility (Adelman & Taylor 2003).
- Market access enables farmers to produce goods in which they have a comparative advantage. The profits from the sold surplus can be used to buy other goods and services the households need, but for which they do not have a comparative advantage in producing (Barrett 2008).
- Market participation is heterogeneous and can be characterized by horizontal and vertical integration as well as the quantity sold to the market.

Method

- Livelihood approach:** based on income generating activities (Brown et al. 2006).
- The underlying assumption is that each household maximizes its welfare based on its livelihood strategy which again depends on its available resources.
- Factor and Two-Step Cluster analyses:** applied as statistical data reduction methods.
- Selected variables:** vertical (market channels) and horizontal (collective action) integration in value chains, subsistence level, share of relevant crops sold (maize, millet, sunflower, sesame), off-farm and self employment, transfer payments, livestock, gender of household head, available storing facilities.

Underlying Data and Study Regions

- Study region: Morogoro and Dodoma, Tanzania.
- Morogoro:** semi humid, contains areas with different levels of food security, depending on precipitation.
- Dodoma:** semi arid, predominance of food insecure areas.
- Sample:** 900 households (450 in each region)
- Data collected: income activities, expenditures (food & non-food), value chain integration.



The Clusters' Integration in the Value Chains

	Cluster 1 (n=157)	Cluster 2 (n=192)	Cluster 3 (n=183)	Cluster 4 (n=141)	Cluster 5 (n=212)
Male household head % (male=1)	0	100	100	79	100
Collective action in general % (1=yes)	4	4	3	100	6
Collective action: maize % (1=yes)	0	0	2	100	0
Collective action: sesame % (1=yes)	1	1	0	21	1
Storing for selling % (1=yes)	37	100	39	65	0
Average months stored for selling	0.9	2.2	0.2	2.5	0
Using Middlemen Channel % (1=yes)	43	90	37	72	46
Subsistence share (%)	65	44	58	51	63
Tropical Livestock Unit (TLU)	0.4	0.8	1.2	0.17	0.98
Land (ha)	1.5	2.3	2.9	1.7	2.6
Located in Morogoro % (1=yes)	38	64	8	91	56
Located in Dodoma % (1=yes)	62	36	92	9	44

- Cluster 1: 100% female headed households, low market integration, high subsistence level.
- Cluster 2: 100% storage, long storage period for selling, mainly selling to middlemen.
- Cluster 3: Mainly located in Dodoma, well-resourced with land and livestock, very low market integration, low level of storing.
- Cluster 4: 100% horizontal integration for maize and sesame, long storage period for selling, mainly located in Morogoro.
- Cluster 5: Low market integration, well-resourced with land and livestock.

Income Composition of Clusters

	Cluster 1 (n=157)	Cluster 2 (n=192)	Cluster 3 (n=183)	Cluster 4 (n=141)	Cluster 5 (n=212)
Income per capita per month (USD PPP)	17.8	28.9	19.6	27.7	24.8
Agriculture (%)	37	60	36	58	46
Livestock (%)	13	12	17	6	8
Natural resource (%)	26	15	24	15	18
Off-farm wage (%)	8	4	9	6	8
Self employment (%)	10	6	12	11	9
Remittances (%)	7	3	6	3	5
Public transfers (%)	2	0	1	0	0
Received food aid / transfers (1=yes)	32	0	93	2	0
Main crop cultivated	Maize / Millet	Maize / Sesame	Millet	Maize / Sesame	Maize / Sesame / Millet

The Clusters' Welfare and Food Security Level

	Cluster 1 (n=157)	Cluster 2 (n=192)	Cluster 3 (n=183)	Cluster 4 (n=141)	Cluster 5 (n=212)
Not enough food (%)	78	60	73	48	64
Not enough money to buy food (%)	74	55	68	42	60
Only access to low quality food (%)	58	44	48	24	41
Low quality water for food preparation (%)	20	15	20	4	11
Vulnerability to expected poverty	85	70	80	71	82
Headcount Ratio (%) ⁵	78	59	70	61	67

- Cluster 1 (female headed) and 3 (Dodoma located) are the poorest and most food insecure clusters, which highly depend on natural resources and are poorly integrated in markets. More than 70% of these households are below the national poverty line. The vulnerability to expected poverty underlines that these households will stay in poverty.
- Even for the wealthier clusters 2, 4 and 5, more than 48% of the households report that they do not have enough food for at least 1 month in a year.

Conclusions

- Female headed households face a high level of food shortages and vulnerability to expected poverty.
- In general the level of food insecurity is higher for households living in Dodoma than in Morogoro.
- The clusters which are well integrated in the market are wealthier and less food insecure than those which are less integrated.
- Storage facilities and the length of storage as well as collective activities seem to increase the welfare level and decrease the level of food insecurity.
- Small-scale farmers' choice of marketing channels is mainly limited to middlemen.

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