A Framework for Analyzing Coordination in African Agricultural Value Chains

Ryan Vroegindewey, vroegin2@msu.edu
Véronique Thériault, theria13@anr.msu.edu
John Staatz, staatz@anr.msu.edu

Michigan State University,
Department of Agricultural, Food, and Resource Economics

Selected Poster prepared for presentation at the

Copyright 2015 by Ryan Vroegindewey, Véronique Thériault, and John Staatz. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.
A Framework for Analyzing Coordination in Agricultural Value Chains: Evidence from Cereal Markets in Mali

MOTIVATION

Context
Supply and demand driven drivers are restructing agri-food systems around the world. This creates potential market opportunities for African smallholder farmers, but these actions have unique constraints in coordinating themselves to emerging engines.

Objectives
Identify value chain governance structures that can coordinate African farmers with emerging market agents, and to examine the conditions under which each is appropriate.

- Develop a framework for understanding vertical and horizontal governance structures in agricultural value chains.
- Apply the framework to case studies of cereal value chains in Mali.

Literature

Economic coordination – alignment of incentives, quantity, quality, and other terms of exchange

Transaction Cost Economics approach – matching transaction characteristics to use existing governance structures.

Contribution:
- Expansion of current vertical coordination frameworks
- Farmer horizontal coordination framework

Developing farmer horizontal coordination framework

Khalidz, 2012; Roux & Lenn, 2009; Staat, 1987; Williamson 1985)

Acknowledgements
We would like to thank the following organizations for their financial support of this research:
- The Agronomy Foundation for Sustainable Agriculture
- University of Buffalo Foundation and Texas A&M University Center for Carbon & Development

REFERENCES

FRAMEWORK

Transaction Characteristics: Independent Variables
Four interacting factors determine the magnitude of transaction costs for farmers and buyers, and, thus, predict governance structure choice (Williamson, 1985):

1. Asset specificity: extent to which an investment has limited alternative use outside the contractual relationship for which it has been made.
2. Frequency: transaction frequency between a given buyer and its suppliers.
3. Uncertainty: unanticipated changes in the circumstances and behavior surrounding a transaction.
4. Externalities: when one party’s actions impose costs or benefits on the other party.

Governance Structures: Dependent Variables
As transaction character, a continuum of horizontal and vertical governance structures emerge to cost-effectively coordinate exchange among farmers and between farmers and buyers, respectively. Structures vary in coordination competencies and internal governance costs. Thus, different structures will dominate in various transaction cost situations.

Horizontal Coordination Choice: The Farmers’ Perspective
In a horizontal coordination, a continuum of cost-oriented and vertical governance structures emerge to cost-effectively coordinate exchange among farmers and between farmers and buyers, respectively. Structures vary in coordination competencies and internal governance costs. Thus, different structures will dominate in various transaction cost situations.

Vertical Coordination Choice: The Buyers’ Perspective
In a vertical coordination, a continuum of cost-oriented and vertical governance structures emerge to cost-effectively coordinate exchange among farmers and between farmers and buyers, respectively. Structures vary in coordination competencies and internal governance costs. Thus, different structures will dominate in various transaction cost situations.

Hypothesis (H) is an agricultural commodity transaction, as the vector of asset specificity, uncertainty, transaction frequency, and externalities problems increase for a [1] buyer and [2] farmer-suppliers, they will seek to increase controller transactions through the use of different (5) vertical and (2) horizontal coordination governance structures, respectively.

Testing the Framework
A case study approach is used to test the hypothesis because there are limited observations and quantitative data, conceptual variables cannot be easily controlled, and because the objective is to develop theory (Dennis, et al., 1993).

The framework is applied to a transaction case by classifying and scoring the transaction characteristics on a five-point scale, then matching each score to the corresponding structure in the framework (example on right).

The governance structure with the highest score is predicted to dominate for that situation (Santora & K莫斯, 2005).

CEREAL MARKETS IN MALI

Case Study Data
Fifteen cases of Malian cereal farmers transactions with wholesalers, industrial and semi-industrial processors, and institutional buyers.

In-depth interviews with farmers, buyers, and institutional providers were conducted in 2014 and 2015, and were supplemented by documentary collection (e.g., contracts).

Transaction Characteristics Analysis: Scores & Illustrative Issues

Asset Specificity

Frequency

Uncertainty

Externalities

RESULTS & IMPLICATIONS

Actual & Predicted Governance Structures

<table>
<thead>
<tr>
<th>Case*</th>
<th>Predicted Structure</th>
<th>Actual Structure</th>
<th>farmers’ position</th>
<th>buyers’ position</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Horizontal</td>
<td>Vertical</td>
<td>Farmers’ left</td>
<td>Buyers’ right</td>
</tr>
<tr>
<td>R2</td>
<td>Horizontal</td>
<td>Vertical</td>
<td>Farmers’ left</td>
<td>Buyers’ right</td>
</tr>
<tr>
<td>R3</td>
<td>Horizontal</td>
<td>Vertical</td>
<td>Farmers’ left</td>
<td>Buyers’ right</td>
</tr>
<tr>
<td>M4</td>
<td>Vertical</td>
<td>Horizontal</td>
<td>Farmers’ right</td>
<td>Buyers’ left</td>
</tr>
<tr>
<td>M5</td>
<td>Vertical</td>
<td>Horizontal</td>
<td>Farmers’ right</td>
<td>Buyers’ left</td>
</tr>
</tbody>
</table>

*Key: R = Rice; M = Maize; MS = Millet/Sorghum

Test the framework on other value chains and countries.

Implications

Policy should moderate transaction costs in cereal markets through more stable policies, improved access to credit and insurance, a stronger contract enforcement regime, and better market information systems.

Farmers should analyze transaction costs relevant to reaching a market and confirm that prices can cover governance costs of creating and maintaining farmer organizations.

Buyers should consider existing horizontal structures — and associated costs factors — when selecting suppliers and negotiating the vertical structure/contract terms.

Future research:
- Incorporate counterfactual structure choice as a non-random variable in the framework, plus consideration of times/volumes of structures, and social inequities.
- Test the framework on other value chains and countries.

Ryan Vroegindeweij* Véronique Théïrat John Staat
*Contact: vroegin2@msu.edu