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**Linking Rice Farmers to Markets through Improved Coordination:
Approaches and Lessons from Mali****Ryan Vroegindewey, John M. Staatz, Veronique Theriault*****INTRODUCTION**

The rapidly growing West African rice market appears to hold much potential for Mali's rice farmers. In response to strong regional and domestic growth in rice consumption, the Malian Government (MG) and donor partners have targeted the rice value chain for investments. The largest institutional buyers in Mali, the Malian Office of Agricultural Products (OPAM) and World Food Program (WFP), have policies that prioritize the direct procurement of rice from rice farmer organizations (FOs). In the last decade in Mali, there has also been growth in industrial milling, accompanied with signs of product segmentation on the consumer markets.

The challenge of linking small-scale rice producers to these emerging market segments can be conceptualized as the coordination of the activities of smallholder farmers with those of buyers, in terms of aligning price, quantity,

quality, and other terms of exchange (Peterson, et al, 2001). In Mali, this objective has received considerable attention from various development programs, and some private-sector initiatives. In order to take stock of these experiences, it is important to ask: "What coordination approaches have been used?" Secondly, "What appears to be working, and why?" With these questions in mind, we present findings from four case studies of market coordination approaches used in the *Office du Niger* (ON) zone of Mali.

**COORDINATION APPROACHES
USED IN MALIAN RICE VALUE
CHAINS**

Adapting a classification originally proposed by Shepherd (2007), we characterize rice coordination approaches using three broad categories, each named after the agent taking the lead on coordination in that particular approach. First, in "the market-led approach," individual rice farmers depend on market prices to coordinate their production and post-harvest activities with output market demands and to facilitate their access to input markets. This roughly describes the dominant approach in Malian rice markets since market liberalization in the early 1990s, which has also been supported with information systems, programs, and other institutions. However, as the complexity of rice market demand and processing has increased, value chain actors

* Vroegindewey is a Graduate Research Assistant, Staatz is Professor Emeritus, and Theriault is Assistant Professor, International Development, all in the Department of Agricultural, Food, and Resource Economics, Michigan State University. The authors gratefully acknowledge the support of the Syngenta Foundation for Sustainable Agriculture under the Strengthening Regional Agricultural Integration, Phase 2 (SRAI 2) project with Michigan State University. The authors assume sole responsibility for the content of this document.

have had to develop additional coordination arrangements.

Farmer-led coordination

In farmer-led coordination, rice farmers associate and create an FO to improve their access to output and input markets. While many Malian rice farmers nominally belong to a village-level organization, two types of rice FOs are noteworthy for the scale and scope of their coordination activities.

Large Marketing Cooperatives federate multiple village FOs with a focused market-oriented mission. They typically obtain commercial volumes from their members through three mechanisms, which can be understood as marketing pathway options for these farmers. First, farmers reimburse input loans in kind at harvest at a previously agreed price. Second, farmers can commit to marketing any additional volume through a warehouse receipt system, in which they again cede the commodities to the union after harvest at a previously agreed purchase price. Third, farmers may make direct impromptu spot sales to the FO based on the current market price.

As a prominent example, *Faso Jigi* organizes 2,960 rice farmers from 119 village cooperatives across the ON zone, and markets up to 3,400 MT of rice each year to the WFP, OPAM, and Malian wholesalers. Key to the implementation of these activities is a staff of fifteen full-time employees (including extension staff and a full time marketing manager) and a warehousing complex of 5,400 MT capacity. Additionally, each year a \$2.8 million line of credit finances production inputs (distributed to farmers on credit) and collective marketing activities. In most years, after the FO has reimbursed bank loans and covered other costs, it pays a dividend to members.

Service Provider Associations represent a variation on farmer-led coordination. These large FOs were originally created to provide a particular line of services to farmers, but over time have developed a distinct pattern of interventions—largely limited to bargaining

strategies to supplement open markets. Below we describe two such alternative approaches and representative examples from the case studies.

As one example, *CVECA (Caisse Villageoise d'Epargne et de Crédit Autogérée)* is a farmer credit union specializing in micro loans for rice inputs and production equipment. In the event of a large tender in the rice markets, CVECA plays an intermediary role (negotiating, information-sharing, and contracting) between its 54,000 members and a given buyer, typically an industrial rice processor or OPAM. While CVECA can facilitate the sale of more than 1,000MT of rice per year, in contrast to Faso Jigi's approach, it does not organize farmer production nor is it heavily involved in output aggregation. However, in 2015-16, the union is introducing a new warehouse receipt system financing mechanism to help village FOs expand their own marketing activities.

A second example is *Federation Farafansiso*, which consists of a network of service centers that offer fee-based training services (including technical assistance for rice production and loan management) to 400 village FOs and 15,000 family farms. Although rice marketing is not at the heart of the federation's formal strategy, in practice Farafansiso's service centers and the central federation office commonly intervene in loan applications, make bulk input purchases, search for and negotiate output markets, and aggregate commercial volumes for buyers, usually industrial mills or OPAM. Furthermore, in 2011, the Syngenta Foundation for Sustainable Agriculture equipped one service center with a semi-industrial milling complex through which it hopes to penetrate higher-end rice market segments.

Thus, in the farmer-led approach, FOs take the lead (albeit in varying degrees, as the above cases illustrate) in coordinating farmers with each other, with input markets, and with output markets. However, in this approach the buyer also usually plays an essential complementary role with respect to this last dimension. In each of the above cases, FOs and buyers invariably coordinate particular transactions through marketing contracts, which are advanced sales agreements (in verbal or written form) that

convey essential market information on delivery timing, quantity, quality, pricing.

Buyer-led coordination

In buyer-led coordination, buyers do not merely provide market information, but reach further upstream to actively organize farmers and link them to input markets. This is usually accomplished through a resource-providing contract in which credit, inputs, and sometimes extension assistance is provided on loan to farmers. These contracts can also take the form of longer-term relational alliances. There are at least two types of buyers that may lead coordination: wholesalers and mini rice mill operators.

As a first example, in the early 1990s one ON-based rice wholesaler began providing fertilizer and cash to individual farmers in his village of origin where he himself also grows paddy. In 2002 he began working with village FOs, who had better access to subsidized fertilizer, reduced lending risks, and simplified contract management. Prices are negotiated and fixed at the signing of written resource-providing contracts, and some farmers sell to him additional paddy after harvest at spot prices. In the past, he has also signed marketing contracts with village FOs to support their own input credit applications.

In another case, a rice processor owns and operates a semi-industrial rice mill, which includes a hulling machine (with a 27MT/day milling capacity), size graders, and warehouse. The plant is located on a 530 ha parcel of irrigated land that the operator leases from the ON. The owner grows paddy on 100 ha of the parcel, while the remaining 430 ha is sub-leased at no cost to three village FOs consisting of farming families who emigrated from the owner's own village of origin. Since 2008-09, the mill obtains input credit from a bank, micro-finance organization, or input providers to provide MG-subsidized fertilizer to these and other village bargaining associations from three ON communes. The mill is reimbursed by farmers in paddy according to a previously agreed (verbal) purchase price.

WHAT EXPLAINS THE USE OF ALTERNATIVE COORDINATION APPROACHES?

We began with the hypothesis that alternative coordination approaches have emerged in Mali because the open input and output markets have not satisfactorily provided that coordination, especially in the context of new complex rice demand. Interviews with rice buyers, farmers, and other actors support this hypothesis and provide further detail. Below we present the most important factors, and discuss their importance both in motivating rice actors to seek alternative coordination approaches and also in determining the specific coordination approach that is used in a given case.

Uncertainty in input and output markets. Interview respondents cited some form of uncertainty as the number-one reason for seeking improved coordination. Farmers reported that each year they are preoccupied with the related uncertainties of timely access to input credit and to appropriate quantities and qualities of chemical fertilizer. Output buyers were concerned with the uncertainty of obtaining sufficient rice supply as throughput for their mill (in the case of processors), or to allow them to fill contracts with other buyers further downstream (in the case of wholesalers). For example, the owner of the mini rice mill reported that he began using resource-providing contracts, and continues to expand his base of contract farmers, in order to increase the capacity utilization of his mill (which in past years was as low as 7%). Buyers also commonly reported uncertainty in accessing commercial credit to purchase rice. The preeminent preoccupation with access to inputs on the part of farmers (in terms of farm inputs) and buyers (in terms of rice throughput) probably explains a common mechanism used across the coordination approaches: the provision of fertilizer on credit that is later reimbursed with rice paddy or grain. Both farmers and buyers also complained of price volatility in Malian rice markets, which they perceive to be partly driven by arbitrary MG rice import-tax exonerations and unpredictable institutional purchases and

distribution patterns, and which further motivate the use of advanced sales agreements.

Asymmetric scale between farmers & buyers. Family farms in the ON are typically less than three hectares in size and usually attain yields of less than 6 tons/ha, much of which is usually consumed by the household (USAID, 2009). The low marketed volumes of these individual farms stands in stark contrast to the large quantities required by wholesalers and mini rice mills, let alone compared to volumes required by large institutional buyers and industrial processors. The high fixed costs of locating hundreds of individual farmers, establishing and monitoring contracts, and assembling their output simply would not be possible without the mediating use of FOs. The farmer-led models represent the largest of these FOs, and it is telling that these organizations do most of their business with Mali's largest rice buyers. Wholesalers and mini rice mill operators trade on a smaller scale, and thus only transact with village bargaining associations, which provide the minimal logistical base for doing business with many small-scale farmers.

Quality debasement along the value chain. Millers and institutional buyers complained that farm-level quality debasement (in particular: high levels of impurities, and broken or discolored grains) is a major issue.^{2,3} The consequences of quality problems are

² Certain post-harvest practices at the farm level account for some of these problems and include inappropriate paddy drying techniques, the use of inefficient mobile hullers to process paddy, inappropriate storage, and the mixing of varieties (N'krumah, 2013; Diarra, et al., 2011; USAID, 2009). Another production-level externality that negatively affects quality is the low compliance rate of the ON authorities, their private contractors, and FOs to collectively maintain ON irrigation canals, which can result in late flooding of parcels, water loss, and inadequate drainage (Michigan State University Food Security Team, 2011).

³ While not as frequently reported by farmers, downstream quality and quantity debasement (such as transporters' mixing of varieties, exposure or rice to humidity, spillage, or theft) can also occasionally be a problem for farmers targeting higher-end rice markets.

particularly acute for rice millers, since the efficient use of their productive assets involves raw material that is not easily met by spot markets.⁴ Processors additionally report that the actual weight of purchased cereal volumes commonly falls short of the contracted weights.⁵ As a result of these negative externalities, rice buyers are cautious about transacting with suppliers whom they do not trust and must clearly communicate quality standards in any sales agreement. Redressing these problems also requires the involvement of FOs to train and monitor farmers in quality management and to facilitate the lumpy investments that are sometimes required (e.g. processing equipment, storage, and transportation) to improve quality.

LESSONS ON COORDINATION

The Mali case studies offer several lessons to rice markets characterized by similar coordination challenges. These lessons have implications for value-chain actors, policymakers, and development partners.

Both buyers and FOs have roles to play in coordination, but choice of a particular approach depends on the situation. A key insight from the Mali cases is that coordination usually requires active participation from both the buyer (at minimum: providing a market and information through an advanced sales agreement), and an FO (at minimum: village level FOs facilitating information sharing and logistics, and representing and monitoring members). Beyond this, the choice of a particular coordination approach should follow from a careful analysis of the given transaction situation. For example, in cases where a buyer (such as a wholesaler or mini rice mill) operates at a moderate scale and has the financial capacity and relational rapport to provide resources and other assistance to farmers, he or she may take the lead on coordination. In situations where farmers face high uncertainty in

⁴ One mini rice mill estimates the value of its semi-industrial equipment at approximately US\$50,000.

⁵ Actors suspected a number of causes, including: poor sack quality, high levels of impurities, normal water loss, negligent or dishonest handling, and instrument error.

input and output markets, target high-volume buyers (such as industrial or institutional buyers), and/or must make large lumpy investments in order to satisfy other buyer standards, a farmer-led model may be most appropriate.

Coordination approaches evolve as situations and capacities change. The Mali cases suggest that over time, a given coordination approach will likely evolve, as participants improve their management knowledge and capacity and/or as the transaction situation changes (Peterson, et al., 2001). Examples include large service-providing FOs that eventually adopted market bargaining functions, and (from other cereal case studies) individual village FOs that expanded their size and marketing activities through federation with other cooperatives. In sum, we observed a general tendency of FOs to seek progressively greater scale and structural complexity, with external project assistance often serving as a critical factor enabling evolutions from one stage to the next. On the other hand, buyer-led contracts demonstrate a tendency to become less formal and controlling over time. A common example of this is written contracts that devolve into repeated verbal agreements. As farmers and buyers build a base of trust and experience trading with one another over time, the form and terms of contracts may increase in simplicity. Because coordination approaches demonstrate an evolutionary tendency, value-chain actors (and the partners supporting them) should allow for flexibility as capacities and situations change.

Getting the FO structure right is important. The Mali case studies suggest that the farmer-led coordination approach has potential in terms of involving the largest number of rice farmers and commercializing the largest volumes of rice. The fact that MG policy places increasing responsibility on FOs for the provision of credit, extension, and marketing assistance further suggests that this approach will be increasingly important. However, the capacity of FOs to manage business relationships and to perenialize services to their members requires structural elements such as dedicated central management and large operational budgets that village-level

FOs or large bargaining associations may not have. Nor may such FOs be large enough to pool sufficient equity and aggregate sufficient volumes to be competitive in certain markets. On the other hand, very large unions appear to face difficulties managing the large heterogeneity of their membership base, manifested in problems such as high operational costs, members' side-selling, and inconsistent quality. The Mali cases also clearly demonstrate the importance of external assistance—both financial and technical—to marketing cooperatives in order to build their capacity to eventually function independently and effectively (see below).

Consideration of the costs of coordination is crucial. Building coordination structures and implementing coordination activities entail large costs. It is important for rice actors and their development partners to understand how these costs are distributed and to confirm that they can be sustainably covered by prices. For example, when targeting a particular rice segment, farmers should carefully analyze the costs required to compete in this market—not just marketing costs but also the fixed and variable costs of creating and maintain a marketing FO structure—and confirm that prices can sustainably cover these costs. The Mali cases suggest that farmers may require external assistance in this preliminary cost-benefit analysis, followed by technical and financial assistance to build strong and cost-efficient cooperatives. The partnership history of the most evolved marketing cooperatives in Mali demonstrate that this assistance must be gradual and iterative, sustained for longer periods of time than what project cycles commonly afford, and should take care as to not promote cooperative structures that are too large or complex for what is appropriate to the targeted market and coordination situation. Assistance should also be cautious about externalizing the operational costs of marketing cooperatives or building market linkage systems that rely on temporary project elements.

Policy has a role to play, especially to reduce uncertainty and negative externalities. Rice actors reported several sources of cereal

transaction costs—especially those related to uncertainty and externalities—that can be reduced by the MG and its development partners. The most promising contributions may involve the related objectives of improving information systems and promoting appropriate risk management tools and instruments. For example, promoting the testing and scaling-up of drought and flood insurance products and guarantee and calamity funds could incentivize increased investments by cereal actors’ in productive assets, thus increasing supply, and reduce the risks of credit default, thus increasing access to credit (MSU Food Security Team, 2011). The MG should also seek to make its cereal policies as transparent as possible, so that actors can make fact-based business decisions. Positive examples of this are OPAM’s adoption in 2015 of a management code for one of its (30,000T) procurement programs and the overall reformation of some of its buying and selling procedures. These include guidelines to begin making direct purchases from rice FOs to help supply national reserve stocks, rather than relying on wholesalers and importers. Such programs allow government to help create new markets for FOs while at the same time helping FOs learn how to meet quantity and quality standards required by large-scale buyers, thereby assisting them to be more competitive in serving these markets in the future.

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