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Linking smallholders to profitable markets in West Africa: Case study synthesis

by

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LINKING SMALLHOLDERS TO PROFITABLE MARKETS IN WEST AFRICA: CASE STUDY SYNTHESIS

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1. INTRODUCTION

Over the period 2014-16, the Syngenta Foundation for Sustainable Agriculture, through its SRAI 2 project with Michigan State University, commissioned seven sets of case studies.¹ These examined innovative models of linking small farmers in West Africa to growing markets for valued-added agricultural products, including processed food products and high-value exports. The models, termed “partnership models” here, involved various forms of contracting with farmers, either through farmer organizations or directly with private firms. The studies aimed at identifying factors that contributed to both inclusion of small farmers and sustainability of the approaches used. This paper synthesizes key results and crosscutting lessons from those studies.

Contract farming with smallholders has a long history in West Africa. It was a central element of colonial and post-colonial strategies to promote export-crop production, typically through state-run single-channel marketing systems for crops like cotton, groundnuts, cocoa and palm oil. These integrated systems provided farmers with technical support and inputs on credit, which was recovered through monopsonistic output marketing arrangements. These organizations succeeded in providing West African small farmers’ access to remunerative new markets, most spectacularly for cocoa and cotton. Yet in the post-colonial period, the marketing boards and parastatals that operated these schemes frequently accumulated large financial deficits due to a combination of poor management, expansion of the number of farmers served beyond the initial low-cost areas of production, sagging world prices, and insufficient incentives for farmers to improve quality (Hollinger and Staatz, 2015). Governments sometimes attempted similar approaches for staple food crops, but the greater complexity of the food system compared with export crops (which were channelled through a few export points) resulted in these marketing organizations never succeeding in handling more than a small share of total production (Berg, 1975).

The growing deficits of the government-backed marketing organizations and the resulting pressure on government budgets were among the forces that led to structural adjustment programs in the 1980s and 1990s. The initial phases of these programs often revealed that the private sector did not automatically rush in to fill the void left by the retreating state enterprises. The structural problems that gave rise to these organizations in the first place (for example, weak or missing markets for key inputs and information) persisted, often leaving small farmers to face high marketing costs and weak incentives to expand production. Since the 1990s, therefore, farmers and their organizations, West African governments and their development partners have all shown growing interest in developing new arrangements to link small farmers to markets. Rather than purely state-run efforts, these arrangements are often conceptualized as public-private partnerships (PPPs) involving farmer organizations, domestic and international private-sector firms, development partners (e.g. NGOs) and government. The focus has been on both export crops and on food crops for the growing domestic and regional markets.

Since the mid-2000s, two factors have accelerated experimentation with innovative models for linking small farmers to profitable agroprocessing and export markets. First, the spike in world food prices (particularly rice) in 2008-09 exposed the vulnerability of West African countries, which are major importers of rice and wheat, to disruptions in import markets for

¹ SRAI 2 = Strengthening Regional Agricultural Integration, Phase 2. See <http://fsg.afre.msu.edu/srai2/index.htm>

their basic staples. This, in turn, led governments and the private sector to expand investment in local production, often in various forms of PPPs (Hollinger and Staatz, 2015; Adjao and Staatz, 2016). These partnerships, often involving contract farming and other forms of product aggregation from farmers, were seen as ways of overcoming failures and weaknesses in markets for inputs, credit, information (e.g., extension services) and in infrastructure that typically constrain smallholder production.

Second, the demand for agricultural products throughout the world has been evolving rapidly from undifferentiated bulk products towards specific attributes sought by consumers, such as ease of preparation, healthfulness and environmental sustainability. In West Africa, this evolution has led to the rapid growth in demand for processed food products, cleaner and more healthful foods (particularly by the growing middle class) and high-quality agricultural exports. Technological change is further boosting demand for large volumes of consistent-quality agricultural products as industrialists develop innovative uses for traditional staples, such as the manufacture of polymers and high-quality starches from cassava (Hollinger and Staatz, 2015).

In order to respond to these growing demands, processors and exporters require a reliable, timely supply of agricultural products of consistent quality and quantity. Such supplies are critical for large-scale processors and exporters to operate their facilities near capacity, holding down unit costs of production. Yet the supply of raw materials from smallholders is often dispersed and irregular. The high transaction costs of dealing with numerous scattered smallholders, many of whom lack appropriate technology and management skills to serve the new markets, may create incentives for downstream actors to develop partnerships with large farmers or turn towards imports for their raw materials. If they follow this path, the result is the exclusion of smallholders from the lucrative new markets.²

2. LITERATURE REVIEW AND KNOWLEDGE GAP

Berlin et al. (2016) describe the various ways of linking smallholders to market as different models of “product aggregation.” These range from producer-driven aggregation with unstructured market linkages (farmer organizations aggregating product and selling in spot markets) to buyer-driven aggregation with structured market linkages (buyer-driven contract farming). Intermediate forms include producer-driven aggregation with structured market linkages (farmer organizations taking the initiative to develop contracts with downstream buyers) and buyer-driven aggregation with unstructured market linkages (buyers acquiring product from individual farmers via spot markets).

The literature on these various models of product aggregation falls into three broad categories: (a) one on collective action by farmers (covering, for example, various models of farmer cooperation involved in producer-led aggregation), (b) one on trader networks, and (c) one on contract farming. In a broad sense, all of these literatures deal with various forms of contracting and the evolution of market structures as conceptualized in New Institutional Economics [NIE] (e.g., Williamson, 1985). For example, farmers’ motivations to undertake various forms of collective action can be seen as attempts to contract with each other and

² As discussed in the literature review below, economic theory is ambiguous as to whether the higher transaction costs of dealing with smallholders leads inexorably to their exclusion from these new markets. The higher transaction costs may be offset by lower labor costs for smallholders (especially for labor-intensive products) and a lower tendency of small farmers to default on contractual agreements if they have fewer market options than larger farmers. Empirical results also show mixed results (e.g., Reardon et al., 2009; Barrett et al., 2011; DaSilva and Rankin, 2013).

others in the agrifood system to mitigate the effects of transaction costs. These costs emerge from imperfect or missing markets for key inputs, outputs and information; large differences in scale between farm-level production and processing and marketing; and imbalances in market power (Staatz, 1987; Sexton, 1989; Sindi, 2013). Similarly, Grosh (1994) framed the analysis of contract farming in Africa in terms of NIE, with a particular emphasis on how it attempts to deal with incomplete or missing markets for critical inputs (e.g., fertilizer, technical information, and credit) and with problems of asymmetric information. The NIE approach, which draws heavily on transaction-cost economics (e.g., Williamson, 1985), has been widely adopted and extended by many other authors analyzing contract farming in recent years (e.g., Jaffe and Morton, 1995; Reardon et al., 2009; Barrett et al., 2011; Bellemare, 2012; Prowse, 2012; DaSilva and Rankin, 2013).

The analyses of these various forms of contracting have largely focused on four issues. First, they have investigated which farmers are most likely to participate in contract farming and why. Second, they have examined the impact of such participation on farm household welfare, particularly participants' incomes, but also more recently household food security (Bellemare and Novak, 2016). Third, drawing on concepts from transaction-cost economics, the literature has tried to explain the presence of different forms of contracting in particular settings, based on the presence factors such as farmer' and processors' ownership of specific assets and the degree of information asymmetry among different market participants. Fourth, the literature on producer-driven aggregation has sought to identify organizational characteristics and management practices that contribute to sustainability of the farmer organizations.

With respect to inclusivity, the key conclusion seems to be that it depends on the product involved (e.g., its degree of labor intensity), the geographic setting (which conditions farmers' alternatives to contracting), access of smallholders to non-land assets (e.g., irrigation, human capital), and the social and political setting. Particularly important among the latter is the degree to which land distribution in the country is unimodal, with a predominance of small farms; or bimodal, involving both large and small farms. When land is distributed unimodally, contracting is more likely to include smallholders since there are few other sources of supply. In situations of bimodal land distribution, agroprocessors have more options to contract with large farmers (Hazell et al., 2010). With respect to the impact of participation on farmers' welfare, older sociological literature emphasized the possible exploitative nature of contract farming, particularly when the buyer had monopsonistic powers, as in many of the state-run cash-crop schemes.³ While concerns about the possible harmful impacts on smallholders of poorly designed contracting systems persist (see United Nations General Assembly, 2011), much of the more recent literature indicates positive impacts on farmers' incomes from participating in such schemes. The authors admit, however, that issues of self-selection make drawing firm conclusions from studies of who participates in contract farming problematic at times (Barrett et al., 2011; DaSilva and Rankin, 2013; Bellemare, 2015).

There is a growing consensus in the contract farming literature that future research needs to go beyond the question of whether participation in such schemes has positive effects on farmer welfare. Several authors call for studies to identify key design features that contribute to positive impacts, both in terms of income and on a broader set of welfare measures (for example, inclusiveness). They also call for broadening the analysis from the set of factors affecting inclusion and welfare benefits typically included in NIE analysis to take into

³See Grosh, 1994, for a summary of this literature.

account factors such as social networks and the links between contracting and other elements of the local economy to explain the success or failure of efforts to contract with smallholders (see, for example, Jia and Bijman, 2013; and Bellemare, 2015).

This article addresses these gaps in the literature. It makes three contributions. First, while having its roots in an NIE transaction-cost approach, it broadens the analysis, as suggested by Jia and Bijman, to take into account the effects of a broader array of geographic, institutional and sociological factors that affect the degree to which smallholders participate in and benefit from different partnership models. Second, it goes beyond the question of whether various models of linking smallholders to high-value markets have an impact on the farmers' welfare to ask how and why the models do so and how the models could be modified to have stronger positive effects. Third, in contrast to the bulk of the literature, which has focused on Asia, Latin America and East and Southern Africa, the focus of these studies is on West Africa and is carried out across a range of institutional, commodity and geographical settings to seek out crosscutting lessons.

3. METHODS AND DATA

3.1 Methods and Conceptual Framework

The case studies summarized in this paper took place in eight countries: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Nigeria, Senegal and Togo. The focus was on marketing and contracting partnerships that linked smallholders to higher-value product markets than local spot markets. These "partnerships" were the unit of analysis in the case studies. They included the types of producer-led and buyer-led initiatives described by Berlin et al. (2016) as well as those that evolved from third-party (e.g. NGO) efforts that originally had other purposes but which evolved to include a product-marketing component. Most focused on cereal crops (particularly rice), as developing new marketing and contracting arrangements for these crops have been a major focus of national and regional agricultural policies in West Africa since the 2008 food price crisis (ECOWAS, 2015). The studies, however, also covered semi-perishable and perishable crops (cassava and mangoes) destined for both domestic and international markets. The choice of cases was done purposively in order to include contracting models that involved smallholders and covered a range of product types, destination markets, geographical/agro-climatic settings and institutional/policy environments. The purposive sampling procedure allows the researcher, in the context of multiple-observation case studies, to generate a wide enough set of observations to begin to disentangle the effects of the various factors affecting a given phenomenon — in our case, the structure of the contracting arrangement (Teddlie and Yu, 2007; Yin, 2014). The cases included models that appeared to be succeeding well and a few that had failed or were foundering after having initially received acclaim in the popular press as innovative and promising.

The studies followed a multiple-case design, in which a common theoretical framework (based on the NIE transaction-cost approach) generated similar hypotheses, questionnaires and interview guides, thereby contributing to broader generalizability of results (Yin, 2015; Sterns et al., 1998). Researchers interviewed actors on both sides of the major transactions and gathered copies of written contracts and other documents, where available, in order to triangulate findings. Case studies are particularly appropriate when the focus of inquiry is not *whether* a particular arrangement has an effect but rather *how and why* it does (Yin, 2015). Such an approach also helps to refine and extend theory, particularly where, as in these studies, a broader range of variables is considered than in typical transaction-cost analyses

(Sterns et al., 1998; Yin, 2015). Case studies delve into the details of institutional arrangements in order to understand how they shape the incentives for individuals' and organizations' actions. They are particularly appropriate when the context for the phenomenon under study is difficult to disentangle from the phenomenon under study (Ibid.). In the case studies summarized here, the changing market policies, market opportunities and trade rules (the context) are deeply interwoven with partnership arrangements under study. A case-study approach is also well suited to many agribusiness studies, where stringent case selection criteria or inaccessibility of many businesses' information limit sample size (Sterns et al., 1998).

Following the transaction-cost literature (e.g., Williamson, 1981; Williamson, 1985; Joscow, 2005; Kirsten et al., 2009), the analysis paid particular attention to the influence of four factors in influencing the arrangements that evolved in these partnerships between buyers and sellers. These included:

- The degree to which each party invested in assets that were specific to the transaction, hence locking the participant into the transaction.
- The frequency of transactions (due, for example, to the perishability of the product and asymmetry between the scale of operations of the farmer and the agroprocessor), which influences whether it is worthwhile to develop more complex, non-spot-market trading arrangements.
- The degree of uncertainty surrounding the transaction (for example, due to unpredictable weather or changes in government policies), which influences the scope for opportunistic behavior by the trading partners.
- The degree to which one trading partner can impose positive or negative externalities on the other (for example, through debasing product quality by careless handling), thereby creating incentives for vertical integration.

Following Grosh's (1994) characterization of different transaction-cost-related problems, the cases also examined the degree to which the partnerships helped overcome constraints imposed on small farmers by market failures in critical inputs (e.g. fertilizer, improved seeds, technical support services and credit) and alleviated problems of asymmetric information on both sides of the transaction.

Because the different case studies covered a range of products, agro-climatic, political and social settings, comparing across studies allows identification of the impacts of a broader range of factors influencing the design of marketing arrangements with farmers, as suggested by Jia and Bijman (Figure 1). These include the institutional environment in which the transactions take place, which includes policy and sociological factors; the state of market infrastructure; and issues of territorial development, which take into account the structure of the local economy and agro-climatic factors.

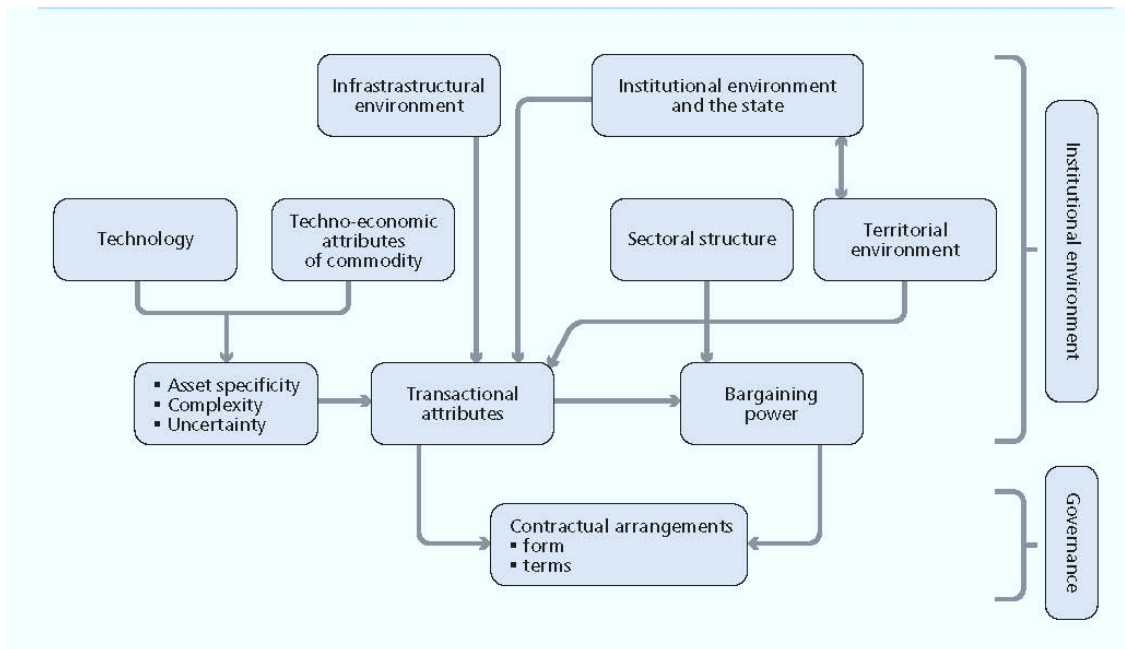


Figure 1. Determinants of contractual arrangements involving smallholders
 Source: Jia and Bijman, 2013.

3.2 Data: The Case Studies

Table 1 provides an overview of the seven sets of studies, which were carried out by teams of West African researchers and colleagues from Michigan State University. The rest of this section provides more details on each of the studies.⁴ We begin with the studies of contracting in the cereals value chains, starting with rice, where contracting has been most widespread, followed by the studies of outgrower arrangements for increasingly perishable products (fresh cassava and mangoes).

⁴ Full reports on each of the sets of studies are available at: <http://fsg.afre.msu.edu/srai2/index.htm>

Table 1. Summary of Case Studies

Study reports	Country(ies)/region	Product(s)	Study focus	Key actors involved in contracting arrangements
Soulé, 2016	Benin (south and central), Burkina Faso (southwest), Côte d'Ivoire (nation-wide), Mali (Office du Niger), Senegal (Senegal River Valley), Togo (south and central)	Rice	Comparative overview of different models of contracting in rice value chains within the ECOWAS zone	Rice farmers, farmer organizations, commercial millers, rice distributors, state agencies, financial institutions
Onyekwena, 2016	Nasarawa State, Nigeria	Rice	How the outgrower model of the largest rice processor in Nigeria has evolved and its remaining challenges	Industrial rice processor/marketer (OLAM), Local Buying Agents (intermediaries), rice farmers in Nasarawa State, Nigeria
Asuming-Brempong et al., 2016b	Greater Accra Region and Volta Region, Ghana	Rice	Comparison of two models of contract farming in the Volta Region of Ghana by processors, one large-scale (WIENCO/GADCO) and the other small-scale (MCRPMS)	Rice farmers, farmer cooperative, processor, state irrigation and extension agencies
Vroegindewey, 2014; Vroegindewey, 2015	Koutiala, Sikasso and Segou Regions, Mali	Rice, millet, sorghum, maize	Examines 15 separate partnerships/contracting arrangements involving various product aggregation models, including farmer-led, processor-led and service-provider led.	Grain farmers, village associations and cooperatives, grain processors, institutional buyers, state agencies
Elegbede, 2016	Kaduna and Ogun States, Nigeria	Maize	Examines how the value chain for maize going into poultry feed is coordinated between large egg producers and feed manufacturers in Southwestern Nigeria and the main maize producers 800 km to the north.	Small and medium-sized maize farmers in north-central Nigeria (Kaduna State), large farmer-dealers, maize wholesalers, feed processors, large-scale poultry farmers
Asuming-Brempong et al., 2016a	Central Region and Volta Region, Ghana	Cassava	Compares three different partnerships established to produce cassava as an input into beer production, linking farmers, cassava processors and breweries	Cassava farmers, assemblers, processors, breweries
Coulibaly and Diarrioso, 2015; Diallo et al., 2016; Diakité and Goro, 2016	Areas around Bamako and Sikasso, Mali	Mangoes for export market	Examines the contracting strategy of one of Mali's largest exporters of fresh mangoes to the European Union, with an emphasis of how it works with farmers to meet stringent product certification standards	Export firm, European importers, mango farmers, custom harvesters (pisteurs), mango interprofessional organization,

3.2.1 *Models of Contracting in West African Rice Value Chains*

Soulé (2016) provides an overview of different contract farming models that have been implemented in rice value chains in several West African countries, particularly since the world rice price crisis of 2008. The study does not pretend to cover all contracting models used in the region, but focuses on analyzing four broad archetypes and describes their implementation in various countries. The study examines the incentives facing various actors (farmers, agroprocessors, traders, service providers and the state) to promote each model, how the institutional and political setting in various countries have favored different models and the capacity of the different models to address, in a sustainable manner, the following common challenges facing the rice value chain:

- Improving farmers' access to profitable markets through providing more predictable market outlets and terms of exchange.
- Strengthening farmers' access to improved technologies that respond to the buyers' quality and quantity needs.
- Increasing the access of actors throughout the value chain to adequate financing, especially in the absence of secure land tenure.
- Providing technical and management support that improves the ability ("professionalization") of small farmers to meet the quality, quantity and timing standards of the more profitable new markets.
- Providing agroprocessors and exporters the quantities and qualities of products they need, at the time they need it, to amortize more fully their costly investments in physical and human capital, thereby increasing their profitability and competitiveness.

The four archetypical models of contracting in the region are:

- **An integrated model**, typified by public-private partnerships being implemented in irrigated rice perimeters in the Senegal River valley. The model involves a strong coordinating role for financing and various support services provided by state agencies, as part of the Senegalese government's commitment to promoting rice self-sufficiency. In this model, the National Agricultural Credit Fund of Senegal (CNCAS) provides production credit to farmer organizations, based on their reported planting intentions. Another state agency, the SAED (Société des Aménagements et d'Equipements pour le Développement) provides farmer advisory services and land improvements to help implement those plans. Farmers reimburse CNCAS after harvest with paddy, which CNCAS takes ownership of but stores in farmer organization warehouses against warehouse receipts. It then contracts to sell the paddy to millers, with the price negotiated jointly by CNCAS, SAED, millers and the rice interprofessional organization, in which farmer organizations are strongly represented.⁵ Millers are induced to purchase through this system, as they can then

⁵ Interprofessional organizations are voluntary organizations, widely promoted in Francophone West Africa, that include representatives from throughout a value chain (farmers, service providers, processors, distributors, exporters, government, etc.). The organizations attempt to improve vertical coordination by addressing value-

receive access to subsidized marketing credit through the National Agricultural Development Fund. Rice distributors, in turn, are induced to contract with these millers because the right to import rice is conditioned upon the importer/distributor also having made a certain level of purchases of local rice. Thus, trade policy combines with state-supported financing mechanisms and extension services to coordinate the whole system. While it is too early to judge the success of the system, yields have risen strongly in the Senegal Valley (to 6 MT/ha) and national production has grown. But the level of funds available through CNCAS and SAED have been constrained, limiting the expansion of the system (especially to include more smallholders), so questions about the long-term financial sustainability of this PPP model remain.

- **Voluntarist models, involving institutional purchases.** In the post-2008 world food price environment, state grain boards in several countries (e.g., Burkina Faso, Mali, Togo and Benin), which had long purchased millet, sorghum and maize for national security stocks, initiated purchases of paddy and/or milled rice, often from farmer organizations. In contrast to the integrated model implemented in Senegal, these acquisitions did not include all producers in a given production area, but were open on a voluntary basis to those producer organizations which chose to participate. In Burkina Faso, there were no formal contracts. The state grain board simply offered to purchase grain assembled by producer organizations. In Mali, the state grain board offered written contracts to producer organizations for delivery of grain to the board. The contracts specified the quantities and quality of rice to be delivered but offered no inputs on credit or technical assistance. The aims of these models were to provide farmers with an additional remunerative market and experience in contracting, as well as allow the boards to accumulate stocks that could be sold to consumers at preferential prices. While these approaches did provide a learning experience for farmer organizations in commercial contracting, the performance so far has been mixed, with the boards' purchases falling well below targets and the quality of the products sometimes falling below standards. The Mali experience showed that most farmer cooperatives lacked the expertise and experience to manage and deliver fully on such contracts, while the Burkina experience illustrated the adverse impact of the board's failure to update its pricing to align with market prices (making the board the buyer of last resort, often of poor-quality paddy). In contrast to the integrated model, the buying agencies did not coordinate with others to provide technical support either on contract management or production. Although other state programs did provide subsidized inputs, receiving these were not contingent on participating in the contracting program. In addition, farmers and other actors in the system (e.g., millers) had to arrange their own financing. The model requires fewer state resources than the integrated model and partially addresses output market issues, but counts on others to provide access to advisory services, improved technology and financing necessary to improve productivity throughout the value chain.
- **Exclusive contracts.** This is perhaps the most widespread form of contracting, wherein a private buyer enters into an exclusive contract with farmers to buy their output in exchange for inputs provided on credit, advisory services and financing. The case study examined the application of this model in Côte d'Ivoire, where government policy has linked it to a territorial development approach. Under this policy, the

chain wide challenges that are beyond the capacity of any one actor to resolve. For details, see Duteurtre and Dieye (2008), Shepherd et al. (2009), and Staatz and Ricks (2010).

Ivoirian government has divided the country into 10 rice production regions. Various large-scale agroprocessors are granted exclusive rice development concessions for each region. The companies typically establish a nucleus farm (under a long-term land lease from local communities) combined with an outgrower scheme.⁶ Three types of milling facilities are established: small mills for local consumption or production of brown rice destined for further processing, intermediate-scale mills (with capacity up to 25,000 MT/year) that produce medium-quality rice for the mass market, and large-scale industrial mills that produce higher-quality rice for middle- and upper-class urban consumers. The programs launched to date provide outgrowers with inputs, land preparation services, technical supervision and advice, and often social investments such as schools, medical centers and health insurance. This approach has led to rapid increases in recent years in rice production in some of the zones, but because the production potential varies across zones, investors have been slow to implement the model in other areas. Farmers remain proprietors of their own land, but its use for rice production is strongly conditioned upon their selling to the monopsonist/industrial firm and following the technical package dictated by the firm. This has led some critics to charge that the system is reducing the farmers to agricultural laborers on their own land and undermining the concept of the family farm.

- **Inclusive or co-managed contracts.** In Benin and Togo, since 2006 the Centre International de Développement et de Recherche (CIDR) has promoted a model involving a four-way partnership involving (a) farmer cooperatives, (b) medium and large-scale agroprocessors or local entrepreneurs, (c) rice traders/distributors and (d) technical and financial partners. The four partner organizations create a limited liability company, called an “Entreprise de Service et Organisation des Producteurs” (ESOP). The ESOP and farmers establish three annual contracts: (a) one for production and supply of the ESOP’s mill with paddy; (b) one for the purchase of inputs on credit (mainly improved seeds and fertilizer); and (c) one for technical assistance to producers, who are organized into rotating savings groups (*tontines*). Technical assistance on production and business management is provided through a five-year contract with an NGO, ETD (Entreprise Territoire et Développement), which also helps to arrange financing through microfinance organizations. The program stresses quality improvement in milled rice, as all ESOPs have adopted similar quality standards and developed a branded product, “Riz délice”, targeted to the urban market. This model stresses local territorial development, with strong links between the rice production and other activities in the local area. It puts more emphasis than the “integrated model” on farmer input into the firms’ decision-making, as farmer organizations are strongly represented in the ESOPs’ boards of directors. But it has also proved highly dependent on the external technical assistance from ETD, and ESOPs have sometimes foundered once that technical support (particularly on managerial issues) has ended. These experiences thus raise questions about how long it would take for the model to become self-sustaining, and at what cost.

⁶ A nucleus farm (sometimes called a nucleus estate) is a farm operated by an agroprocessor to produce raw product to complement that purchased under contract from surrounding local farmers (“outgrowers”). The nucleus farm’s output helps to ensure an adequate volume is available to operate the processing plant near capacity. Typically nucleus farms are many times larger than the farms of outgrowers.

3.2.2 *Olam's Rice Outgrower Scheme in Nasarawa State, Nigeria*

Onyekwena (2016) examined the performance of efforts by Olam International, a Singapore-based firm, to operate a rice outgrower scheme in Nasarawa State, in central Nigeria. Olam is a major producer and importer of long-grain rice in Nigeria, which it markets in branded, consumer-ready packages. The Nasarawa outgrower scheme began in 2012, replacing earlier unsuccessful efforts by Olam to operate outgrower schemes in Benue and Kwara States in 2009 and 2010. The previous efforts failed despite substantial assistance from USAID, in the form of technical assistance to farmers. The main causes of failure were competition with cheap, smuggled rice imports and high levels of side-selling by farmers of their paddy to competitors and consequently low repayment rates of the farmers' input loans. The firm shifted production to Nasarawa State 2012, where it purchased and refurbished an existing mill and sought to supply it through a combination of own-production on its 10,000 ha nucleus farm, outgrowers and purchases on the spot market. In contrast to the previous scheme, the new arrangement provides no loans to farmers for fertilizers (as the company anticipated that fertilizer would be provided by the Nigerian government's Agricultural Transformation Agenda [ATA]), does not collect paddy at the farm gate, and ended a previous agreement with the government to provide mechanization services to the outgrowers. Olam does distribute improved seed to the farmers at a 72% to 77% subsidy, with the subsidized purchase price recovered at harvest.

As of 2015, the program had a much lower participation rate than anticipated, having attracted 650 farmers (mainly growing rainfed rice) scattered over a 150 km radius of the mill, not all of whom were currently active. As a consequence, Olam's mill was able to operate only at 50% of capacity. Many farmers appear to have been attracted initially by the subsidized seeds and technical training provided by Olam, but then did not continue with the outgrower scheme.

Several factors explain the mediocre performance of the outgrower scheme thus far. Olam originally conceived of it as a PPP, with the Federal Government providing subsidized fertilizer and mechanization services under the ATA. These government contributions have not been forthcoming, leaving important gaps in the scheme. The difficulties of outgrowers in accessing fertilizer and other inputs have resulted in very low yields, under 1 MT/ha. Olam requires outgrowers to cover the cost of transporting their paddy to buying stations operated by Olam representatives in an environment where the outgrowers are widely scattered and road infrastructure is poor. Because the representatives are under pressure to increase the volume of paddy flowing to the mill, they also buy on the spot market. They sometimes offer to cover transport costs from the spot market to the buying station, thus offering a higher effective price to non-outgrowers than to outgrowers. Also because of the pressure to increase supplies, the representatives often offer "loose" contract terms to outgrowers. Of 104 outgrowers interviewed during the study, 73% had contracts that imposed no penalties for selling their output to buyers other than Olam.

To fill some of the gaps in input supply and product aggregation, a group of Local Buying Agents (LBAs) has emerged as intermediaries between Olam and many of the farmers. LBAs include rich farmers, some of whom are contract growers, village chiefs and other influential people in the community who do not have contracts with Olam. The LBAs receive seeds from Olam and distribute them to "second-tier" outgrowers, who have informal agreements to deliver output to the LBAs. The LBAs often provide input credit to the growers. The LBA's local knowledge about who is creditworthy in the community and their strong social networks (including use of village courts and vigilante groups) help to ensure greater contract

compliance. After aggregating paddy from second-tier outgrowers, the LBAs sell it back to Olam or, if prices are more attractive, to other millers. The LBAs have emerged as a strong element in the market, and while they do help Olam attract paddy, the company ends up having to pay them a premium averaging about 5% above spot market prices for paddy. It is still too early to judge the final outcome of the Olam outgrower scheme, but the case study emphasizes the challenges it faces and the costs that need to be borne by someone (company, the state, or intermediaries) for the program to succeed.

3.2.3 Linking Smallholders of Rice to Agroprocessors in Ghana

This study (Asuming-Brempong et al., 2016b) contrasted two approaches to contracting in Ghana's rice value chain. One involved a large-scale effort in an irrigated area, initiated in 2011 by the Dutch-based Global Agricultural Development Company (GADCO), a social enterprise company whose rice production and marketing activities in Ghana ultimately failed and were taken over in 2015 by the Dutch-Ghanaian firm WIENCO.⁷ The second is a much smaller effort in an upland rice production area, built largely on personal relationships between the buyer, the Mawuwoe Cooperative Rice Processing and Marketing Society Ltd. (MCRPMS), and outgrowers around Hohoe in the Volta region of South Central Ghana.

GADCO/WIENCO. The GADCO model is now being implemented by WIENCO, a Ghanaian-Dutch firm that originally began as an agricultural input importer and distributor. The model, which operates under the name Copa Connect, is a PPP involving contracts with smallholders (530 in 2015), who produce paddy in two publicly owned irrigation schemes managed by the Ghana Irrigation Authority (GIDA). The two crops per year from the smallholders complement production from the GADCO/WIENCO nucleus farm, 120 ha of which are used for rice production. The paddy is milled in WIENCO's industrial-scale mills, and WIENCO markets it under brand names developed earlier by GADCO.

The model involves an exclusive contract between WIENCO and the outgrowers. Growers sign an agreement acknowledging the inputs received on credit from Copa Connect (seeds, fertilizer, and crop protectants) and the amount of paddy needed to reimburse these costs, based on a previously negotiated paddy price. Copa Connect also pays farmers' irrigation charges to GIDA at the beginning of each season and recovers those costs at harvest. The early payment helps GIDA's cash flow and permits timely canal maintenance.⁸ Copa Connect also makes a lump-sum payment at the end of the season to GIDA, which helps to cover office expenses. Other elements of the PPP involve the farmers receiving extension advice both from WIENCO and GIDA and the use of GIDA's crop budgets as an element in negotiations to set the paddy price.

The contract requires farmers to use seeds provided by Copa Connect, follow specified agronomic practices and sets quality standards for paddy delivered to the company. Its field agents visit each farm about four times per season to verify that growers are following recommended practices and to provide technical advice. In principle, the contract calls for all paddy that meets company standards to be delivered to Copa Connect, beyond an amount set aside for home consumption. The contract, however, does not provide credit for other

⁷ Social enterprise companies differ from typical NGOs in that social enterprises attempt to build, from the outset of their activities, a profitable business model around providing services, including marketing services, to small farmers that will be financially sustainable.

⁸ The timely canal maintenance allowed the area to move from one to two crops of rice per year, which had the effect of making area farmers more dependent on rice production for their income and hence tended to lock them into the contracting system.

production costs (e.g., labor for land preparation and harvest). Farmers therefore often borrow from local small-scale rice processors known as “market women”, who also want reimbursement in paddy. The “home consumption allotment” therefore often includes quantities for this reimbursement.

WIENCO reports that it has adopted the same basic model that GADCO designed but has been much more rigorous than its predecessor in implementation, especially regarding on-farm monitoring. GADCO reportedly suffered from lower-than-anticipated yields (one extension official alleged that this was due to some input dealers in the area selling adulterated or counterfeit products — a practice that WIENCO, as an input distributor, quickly ended) and that farmers engaged in widespread side-selling, which undermined credit recovery. WIENCO has implemented strict credit recovery rules, wherein the company, except in unusual circumstances, blacklists defaulters from future contracting.

Under WIENCO’s management, production, yields, and area all increased sharply from 2014 and 2015, as did participant incomes. The study noted that weak farmer associations limit farmers’ bargaining power in their negotiation with the company. Farmers also complained of limited access to financing to hire farm labor and inadequate access to mechanization services for land preparation and harvesting. The lack of credit from Copa Connect for hiring farm labor leads to borrowing from market women and hence diversion of paddy (side-selling) to repay those debts. This diversion contributes to Copa Connect’s main constraint, which is inadequate volumes of paddy.

MCRPMS is a rice processing facility owned by a woman in Hohoe in the Volta region who previously was a petty trader of grains and legumes. Through involvement in a donor-sponsored marketing project in 2006, she and 12 others formed an upland rice producers’ cooperative and obtained a mill on credit, which she manages on the group’s behalf. Alongside the mill, she operates her own firm, which processes rice into cookies, crackers and flour. When she originally launched her company, she established production contracts with many farmers in the area, providing credit for inputs and buying output. Widespread problems of side-selling and credit default led her to abandon that model. Currently she works with seven carefully selected farmers she knows well, who sign agreements acknowledging inputs received on credit and the amount of paddy to be ceded at harvest to repay the debt. No other written contract exists. There is, however, an informal agreement that MCRPMS will buy all the paddy that farmers want to sell if it meets the firm’s quality standards. Volumes sold beyond the amount needed to reimburse credit are paid at a premium above the prevailing market price, and the company covers transport costs to the mill, giving farmers a strong incentive to deliver. The company can offer a premium over market prices because (a) it is not a large buyer and thus its actions do not bid up overall market prices and (b) its production of value-added products beyond milled rice generates margins that allow it to afford the premium. The company has no nucleus farm, but buys on the spot market from growers outside of Hohoe district to get additional volumes. Farmers receive extension advice from Ministry of Food and Agriculture (MoFA) agents. Although the company has no formal relationship with MoFA, informal social ties with the agents promote close collaboration.

To date, the model has provided participating farmers access to credit and an assured market, inducing an increase in average farm size from 5 acres to 25 acres. Farmers, however, like those in the Copa Connect model, bemoan the lack of credit for hiring farm labor and limited access to mechanization services for land preparation and harvest, likely reflecting rising labor costs in Ghana. The model has allowed the firm to ensure a steady supply of good

quality paddy. However, the reliance on social ties and close personal screening of participants probably limit the scope for expansion.

3.2.4 *Linking Malian cereals producers to agro-processors*

This study (Vroegindewey, 2014; Vroegindewey, 2015) analyzed 15 different partnerships linking rice, maize, millet and sorghum farmers to agroprocessors, wholesalers and other large buyers. The arrangements varied from a small food processor contracting to buy maize from 21 individual farmers to cooperative unions, made up of many village-level cooperatives and involving thousands of farmers, contracting to sell to the World Food Program, the national grain board (OPAM⁹), and private wholesalers. The buyers' primary motivations for entering into such contracts were to ensure an adequate volume of cereals to operate their processing facilities near capacity (given their high fixed investments) and to improve the quality and timeliness of their cereals acquisitions. Farmers' primary concern was to improve access to inputs, particularly fertilizer, typically by either obtaining it directly from the buyer on credit or by using the contract or donor-provided guarantee funds (in the case of large unions) as collateral to obtain an input loan from a financial institution.

The study identified three broad types of buyer-seller partnerships. It named these after the actor who provided most of the aggregation and market linkage services, and found considerable variations within each type:

- **Buyer-led models.** These involved a processor, wholesaler, or end-user (e.g., poultry farmer) contracting with individual grain farmers, a farmer cooperative or a group of cooperatives. The buyer specified quantities and qualities of product needed and often provided inputs and sometimes technical assistance. Almost all the cases studied involved buyers working with farmers with whom they had close personal or professional ties and complementing purchases from these farmers with own production via a nucleus farm and from spot purchases. The reliance on social ties for contract enforcement, particularly when side-selling makes it difficult to recover credit for inputs provided earlier in the season, may limit the expansion of these efforts. In the one case where contracting took place with individual farmers rather than through farmer organizations, the farmers were discussing grouping together into cooperatives to improve sharing of information and access to financial services.
- **Farmer-led models.** This was the dominant model, reflecting in part policies of the Malian government and its development partners to promote farmer organizations as the primary interface between individual farmers and the market. In this model, village-level farmer organizations, grouped together in cooperative unions, took the initiative in organizing farmers, bulking production, usually arranging the purchase of inputs, and selling the output, either on the spot market or through contracts with downstream buyers. The models had considerable variation, with the smaller and less sophisticated versions involving cooperatives and local unions that offered limited and inconsistent market linkage assistance to farmers. In more sophisticated versions, the union functioned as a large marketing cooperative, often operating a warehouse-receipt system that allowed farmers to receive an initial payment at harvest while the grain was stored for sale later in the season, followed by a patronage refund after the final sale. This latter model has relied on substantial and

⁹ Office des Produits Agricoles du Mali, the agency in charge of managing Mali's national grain reserves.

often long-term technical assistance from development partners to build the capacity of the farmer organizations to manage such contracting. Even the most successful of these cooperative unions are still dependent on such support, emphasizing the long-term nature of building such capacity at the grass-roots level.

- **Service-provider-led model.** In a few instances, organizations that originally arose to provide farmers with other services, such as access to financial services or fee-based technical assistance (either directly to individuals or through village-level farmer organizations), have also become involved in input and output marketing. They have facilitated bargaining by their members for grouped sales of cereals to large buyers, applications for input loans, and bulk input purchases. The emergence of this model illustrates the difficulty of trying to deal with constraints in the input and credit markets independently of addressing problems in the output markets.

Across all three models, the study noted a tendency of vertical coordination tools (contracts between cereal buyers and farmers) to become less formal over time as the parties developed trust and a common understanding of expected transaction terms. Written contracts often evolved into verbal agreements and sometimes into informal alliances. On the other hand, horizontal coordination arrangements, involving relationships among farmers through farmer organizations, often became more formal and complex over time as the organizations expanded to include more members across broader geographic areas and as they expanded their scope of farmer services and marketing activities. While such formalization is likely necessary as farmer organizations expand to capture scale economies in input acquisition and output marketing, it increases the fixed and managerial costs and challenges facing these organizations.

3.2.5 Linking Smallholder Maize Farmers to the Market for Poultry Feed in Southwest Nigeria

Elegbede (2016) examined linkages between maize producers in north-central Nigeria (Kaduna State) and poultry feed producers serving the rapidly growing egg-production value chain in the southwestern area of the country, in Ogun State and around Lagos. Industrial-scale poultry production is growing rapidly in the southwest, stimulating demand for maize as a key input into poultry feed. Because of better growing conditions, most of the maize is sourced from the northern parts of Nigeria's Middle Belt, approximately 800 km to the north of Lagos. Among the challenges faced by the maize/ poultry feed value chain are: (a) aggregating large and consistent volumes of maize to allow the poultry farms and feed mills to operate near capacity, (b) carrying out trade in the environment of insecurity in the North, where cultural traditions and languages are different than in the southwest and (c) finding trustworthy maize wholesalers to serve as a link between maize and poultry farmers.

The case study, carried out in collaboration with researchers from the Federal University of Agriculture, Abeokuta, involved interviews and focus-group discussions with over 100 participants in the maize-poultry value chain (farmers, wholesalers, feed manufacturers and poultry producers). Given the physical and cultural distances involved between the poultry and maize-producing areas, large poultry farms and feed manufacturers did not contract directly with farmers in the north for maize. Instead, they contracted with wholesalers who specialized in the trade between the two regions. The wholesalers frequently lived in the southwest but had strong family and business ties in the north and hence found it easier to operate in that region. The wholesalers sourced maize from their own farms in the north and informal purchase agreements with large farmers (with farm sizes up to 3000 ha). The large

farmers themselves also acted as aggregators. They often had either oral or written contracts with medium-sized farmers (average farm size around 90 ha) to supply maize and sometimes provided them with inputs on credit. Contracts were frequently based on principles from Sharia law and enforced largely through social ties. Smallholders (average farm size around 3 ha) were largely excluded from contracts and sold their small surpluses in local spot markets. The large farmer/aggregators would purchase in the spot markets only when supplies from their own farms and the medium-sized farms with which they contracted were insufficient to meet the volumes promised to the southern wholesalers. Smallholders thus benefited only indirectly and episodically from the growing demand for maize for poultry feed. The absence of strong small-farmer cooperatives in the Kaduna area contributed to the exclusion of the small farmers from this market. Their lack of means to obtain inputs on credit limited their production, making them even less attractive as a source of maize for the wholesalers given the transaction costs of dealing with many such small suppliers.

3.2.6 *Linking Smallholders of Cassava to Agroprocessors in Ghana*

In contrast to cereals, cassava roots, once harvested, are a perishable crop, as they begin to deteriorate within 24 hours. While they have no fixed maturity date and hence can be “stored in the ground” until harvest, roots older than 12 to 14 months are typically too fibrous for use in many industrial processes. Because the roots are about 2/3 water by weight, transport costs are high, requiring production either to be located near processing facilities or intermediate processing to remove moisture content (e.g., through chipping and drying) to take place in the field. Industrial processors also have to compete for roots with small-scale processors, who produce products like *gari* for human consumption. Because a small-scale processor sources the bulky roots from a much smaller area than an industrial producer, the small-scale processor’s per-unit assembly costs are typically low, rendering this competition intense. Cassava prices in Ghana typically fluctuate widely intra-seasonally, with gluts and low prices in the rainy season when farmers harvest the bulk of the crop.

Asuming-Brempong et al. (2016a) examined three partnerships aimed at linking smallholder cassava producers in Ghana to industrial end users — in these cases breweries. One arrangement had failed, while two were still functional in 2016. The breweries began producing cassava-based beer in late 2012 and early 2013 in response to changes in Ghanaian tax law that created greater incentives to use locally produced ingredients in food manufacturing. In addition, the cassava-based beer could be produced at a cost of about 35% below that of conventional beer, opening the possibility of serving a new large, low-price, low-income market. Two of the cases studied involved Accra Brewery Ltd (ABL), owned by the multinational SAB-Miller, and one involved Guinness Ghana Brewery Ltd (GGBL). Each study examined a series of contracts linking the brewery, a cassava processor, and farmers.

Model 1: ABL – DADTCO Ghana Ltd – Smallholders. The ABL-DADTCO-smallholder partnership began in 2012 in anticipation of ABL’s launching a cassava-based beer in 2013. DADTCO is a Netherlands-based social-enterprise company whose mission is “to initiate a cassava revolution across Africa” (<http://www.dadtco.nl/>) through the creation of value-added cassava products based on DADTCO’s patented processing technology. DADTCO entered Ghana in 2010 at the request of the Ghanaian government to help find a solution to the problem of high post-harvest losses that followed earlier projects that promoted cassava production. Based on the recommendation of a former SAB-Miller employee, DADTCO was selected to produce high-quality cassava cake (HQCC) for ABL to use as the main carbohydrate ingredient in its planned cassava-based beer, following a model that SAB-Miller had successfully implemented in Mozambique. DADTCO introduced its “autonomous

mobile processing unit” (AMPU) to Ghana. This is a machine that can be transported by truck close to farmers’ fields. The unit grinds the roots, creates a slurry and then reduces the water content of the product by 40%, creating HQCC, which is packaged in large polyethylene bags and is stable for at least six months. The product then is transported to the end-users’ site as demand warrants.

Based on a contract it negotiated to sell its HQCC exclusively to ABL, in May, 2012, DADTCO began contracting with farmers in the Volta region to produce cassava roots for the following season. The purchase agreements committed DADTCO to buy all the cassava a farmer produced at a pre-negotiated price as long as it met DADTCO’s quality specifications. The farmer, however, was not required to deliver any specified quantity to DADTCO, but could sell to any buyer. DADTCO in turn did not provide farmers with any inputs on credit nor specify the varieties to be grown; however, it did promise to cover the costs of harvesting and transporting the roots from the farmers’ fields to the AMPU. Prices were set based in part on world-market conditions, including what DADTCO was paying in other countries.

Farmers were paid in cash upon delivery. Because it had a contract to sell the HQCC to ABL, DADTCO signed purchase agreements with farmers a year in advance, giving farmers assurance that they would have a market for their crop at a known price before they planted. Farmers responded by increasing production, but in 2014 ABL abrogated the contract, stating that the HQCC contained too much fiber and that the cost of removing it at the brewery made its use prohibitive. DADTCO was left with no buyer for its product and therefore was unable to honor its purchase agreements with farmers. They, in turn, found themselves without a market for their product and were very embittered. At the time of the study, DADTCO had not been able to attract other clients for its product. One option DADTCO considered was bringing in additional equipment that it used in Nigeria to refine the cake into high-quality cassava flour. This would require a large increase in volume to operate the flour facility at scale, which created a dilemma for the company — how to attract even more farmers in the absence of a sure market for the output, especially in light of the previous experience. While the HQCC model had been successful in supplying SAB Miller’s facilities in Mozambique, ABL stated that its brewery used different technology than that in Mozambique. ABL, however, also had the alternative of buying high-quality cassava flour from an alternate supplier, Caltech, as explained below.

Model 2. ABL-Caltech-Smallholders. Caltech is a private company originally established with the aim of producing alcohol from local feedstocks to sell to the distilling and pharmaceutical industries. Although established in 2006, it did not begin cassava production until 2012. Its intent was to first produce High Quality Cassava Flour (HQCF), which could be sold to a variety of clients, and later develop an ethanol plant that would use HQCF as a feedstock.

In 2012, Caltech negotiated with local authorities for a lease of 2,500 ha for 70 years in order to establish a nucleus farm for cassava production. The lease displaced local farmers, but rather than hire them back as wage laborers on the nucleus farm, the firm invited them to be “block farmers” (or “in-growers”). The firm offered them free use of a block of land on the nucleus farm, planting materials and other inputs on credit, technical training and off-season credit if they would grow cassava for sale to the firm. Caltech complemented the block-farmer arrangement with an outgrower scheme. Outgrowers grow cassava on their own land (as opposed to growing it on a block of the nucleus farm) and are also provided inputs on credit and technical assistance. Company field agents monitor the production practices of both types of farmers. Block farmers are obliged to sell all their cassava to the firm, while

outgrowers only have to sell enough to cover the cost of the inputs provided, although they can sell more. Prices are set through a negotiation process involving a wide range of stakeholders, including the company, the farmers, local chiefs and elected officials and MoFA representatives, and the prices can change based on market conditions. Farmers are paid cash upon delivery of their crop. Caltech also provides off-season loans to help cover expenses like school fees as part of its effort to build loyalty of farmers. It also will reprogram loan repayment if it judges that the failure to repay is due to circumstances beyond the farmer's control. If the farmer does not repay the debt in two years, however, Caltech terminates the farmer's contract. At the time of study in 2015, 65% of the firm's supply of roots came from block farmers and 35% from outgrowers.

Caltech in turn sells its HQCF on the spot market to all its clients. As of 2015, it did not have a written contract with ABL, but given the growing importance of ABL as a client, both parties were considering the establishment of such a contract. Caltech's ethanol plant was nearly operational, giving the company the prospect of a more diverse revenue stream than that of DADTCO.

Farmers have responded to the stability of prices and having an assured market by expanding production, but some problems of side-selling and credit recovery have occurred with outgrowers. The firm has found that compliance monitoring is easier with block farmers, especially women block farmers, who have fewer options to get such support outside the program and hence are very loyal.

GGBL-ASCo-MAXPO-Farmers. GGBL launched its cassava-based beer in December, 2012. It opted to use High Quality Cassava Starch (HQCS) as a feedstock and contracted with the Ayensu Starch Company Ltd (ASCo) to provide it. ASCo is a state-owned enterprise created in 2002 to help resolve the problem of gluts in the cassava market at harvest by offering an additional outlet to farmers. Prior to the contract with GGBL, ASCo was dependent largely on government funding and faced severe financial and management problems, which frequently led to months-long shutdowns of its plant. Currently, ASCo sells 99% of its output to GGBL. In return, GGBL often advances funds to GGBL to finance repairs of its plant and pay operating expenses and then deducts those amounts from its payments to ASCo for its starch.

To obtain roots for its factory, ASCo has a 2000 ha nucleus farm. Twelve block farmers produce cassava on 200 ha of this farm, with the remaining area cultivated by laborers hired by ASCo. The production from the nucleus farm is complemented by an outgrower scheme, involving 2,500 outgrowers (1625 women and 875 men). ASCo's previous experience in dealing with farmers led to numerous contract breaches, so in this new arrangement it opted to contract with a private transport firm, MAXPO Transport Services (MAXPO) to serve as its aggregator of cassava roots from the block farmers, the outgrowers, and through spot markets outside of the outgrower region. MAXPO in turn contracts with sub-aggregators. MAXPO signs production contracts with farmers and is later paid by GGBL on behalf of ASCo for the roots it delivers, plus a service fee. GGBL agreed to advance the payment to MAXPO on behalf of ASCo (and again recover the funds later by deducting the amount paid ASCo for its product) in order to ensure timely payment to farmers for their roots. This is something that ASCo, which depends on ponderous government procedures to obtain its funds, is unable to guarantee. Under the contracts with the farmers, they receive no inputs on credit, just technical assistance (from ASCo) and, for the block farmers, free use of the land. In a few instances, MAXPO does extend credit, but in these cases, farmers are forbidden from side-selling. In most cases, the contract just specifies price, recommended agronomic

practices and MAXPO's willingness to buy as long as the roots meet ASCo's quality standards. Prices are set annually through negotiation between ASCo and farmers' representatives, based on crop budgets and market conditions. Although the contract prices may be adjusted upwards later in the season if the market price increases, this is contingent on ASCo also being able to negotiate a price increase for its starch with GGBL. Farmers are paid within two weeks of harvest.

Seventy-five percent of the outgrowers interviewed during the study believed that ASCo-MAXPO-GGBL arrangement had improved the stability of cassava prices, certainty of payment, and access to technical assistance. Most, however, wanted greater access to input credit and to labor-saving devices (mechanization and herbicides), as they felt that cassava production was too labor-intensive. Transport of roots over bad roads to purchase sites was also cited as a major problem. The need for credit led to some side-selling to market women (who provide such credit in exchange for roots at harvest), leading to poorer contract compliance.

While ASCo's contract with GGBL has allowed ASCo to restart operations, it is clearly the weak party in the system. GGBL seems reluctant to take over ASCo entirely because this would involve assuming ASCo's accumulated debts. The current system, however, does not seem tenable over the long term, as frequent breakdowns of the ASCo plant have prevented GGBL from meeting more than 10% of its production target for its cassava beer. At the time of study, the Government of Ghana was considering restructuring options for ASCo, including privatization.

3.2.7 Linking Malian Smallholder Mango Producers to the Export Market

Coulibaly and Diarrioso (2015), Diallo et al. (2016), and Diakité and Goro (2016) present the results of a case study of a Malian firm, SCS International, which has developed a model of linking small and medium-scale mango producers in Mali to the growing market for fresh mangoes in Europe and North Africa. Fresh mangoes are a highly perishable product, whose production involve decades-long fixed investments in orchards, and whose prices can face sharp fluctuations due to strong seasonality and year-to-year variations in production. Successfully competing in the export market requires strict adherence to international certification standards and meeting rigorous delivery schedules, requiring tight coordination among value-chain actors.

SCS began exporting mangoes in 2007, exploiting a market window in Europe from April through July during which the major Latin American exporters have few mangoes available. Because Mali's mango season lasts only a few months, the company also imports fruits and vegetables into Mali during other periods of the year to help amortize its investments. The company's fresh mango exports have grown from 88 tons in 2007 to 1500 tons in 2015, making it one of Mali's largest mango fresh exporters. Its mangoes meet Global Gap standards and are sold in major supermarket chains in Europe, Morocco and Gabon. The company reports that because of supply constraints, it is able to meet less than 50% of the volume its overseas buyers are willing to purchase.

The company works primarily with small- and medium-scale growers, whose median orchard size is 2 ha. It signs annual, renewable contracts with growers specifying that the growers will accept training from SCS, follow production procedures and accept audit inspections that lead to their becoming certified producers for the export market. In return, the company agrees to buy their mangoes that meet export standards at a price to be negotiated between the

parties annually before the start of the marketing season. Beyond the training and certification, the company does not extend any inputs or credit, although it occasionally helps growers out with gifts to meet family emergencies. The attraction to the grower is to have an assured market outlet and the ability to access the export market, where prices are much higher than the domestic market.¹⁰ Growers are free to sell to other buyers, and since much of their production does not meet export standards, a substantial proportion is sold on the domestic market. As of 2015, the company was working with 800 growers, 192 of whom had been Global Gap certified and 17 of whom were also internationally certified organic producers.

The company relies on custom harvesters, known as “pisteurs” to harvest the crop in accordance with export standards. The pisteurs actually buy the crop from the farmers (in principle at a price consistent with the SCS negotiated price) and deliver it to SCS at packing facilities managed by the mango industry interprofessional organization. There, SCS employees sort, grade and pack the fruit, and the pisteur is paid for those that are accepted for export. The pisteur sells the remainder on the domestic market. The pisteurs are required to segregate the mangoes by orchard of origin to ensure traceability. Some farmers allege, however, that pisteurs sometimes comingle mangoes from non-certified producers with those of certified producers, creating an obvious risk to SCS. Because of such concerns, SCS is trying over time to move to greater reliance on producer-pisteurs — certified producers who also custom-harvest for other growers — believing that such actors have fewer incentives for such behavior.

One of SCS’s main challenges is to expand the volume of its exports to meet client demand. To do so while minimizing its risks and avoiding the transaction costs of dealing with an ever-expanding number of growers, the company seeks to diversify its source of supply and simultaneously raise the productivity of its growers’ orchards. Most of these orchards are over 40 years old and have yields of under 2 MT/ha. To achieve these aims, the company is planning to create its own 200 ha orchard and adopt drip-irrigation technology used in mango production in Ecuador. The company believes that this technology can lead to at least a five-fold increase in yields compared with those of its current growers’ orchards. The nucleus farm will be used not only to boost the export volume directly but also as a training and extension center for contract growers.

In its plans to increase its growers’ productivity, however, the company faces several system-wide constraints, which are difficult for a single, relatively small, company to resolve. These include:

- A low level of literacy among many of the growers and pisteurs, with the result that the terms of the written contracts are still poorly understood by some of these actors in spite of the company’s efforts to translate the terms into local languages.
- The low level of grower investments orchard infrastructure, such as wells, fences, and access roads. This low level of investment reflects a vicious cycle where low productivity reduces cash flow and hence makes productivity-enhancing investment in the orchards more difficult.

¹⁰ For example, in 2014, farmers selling to the export market received an average *orchard-level* price of 100 FCFA/kg, compared to an average *retail* price in the domestic urban markets of 75 FCFA/kg (Coulibaly and Diarasso, 2015).

- The geographic dispersion of orchards, which increases monitoring costs.
- The need to replant many of the aging orchards with new, more productive trees. This replanting will require large capital outlays by many growers, and obtaining the financing to do so from a banking system that views fruit production as very risky is problematic.
- A “seed quality” issue. Some growers buy new trees from nurseries, but the absence of any certification for these nurseries often results in growers buying trees that are either diseased or not the variety they are alleged to be.
- Very limited public-sector research and extension on improved mango varieties and orchard management.
- Lack of trained personnel in arboriculture. Mali’s main faculty of agriculture and natural resources trains general agronomists but no specialists in tree-fruit production who could serve as extension staff to growers or researchers into challenges facing the industry.
- Management of export packing facilities. Under donor funding, in 2008 the Malian government developed two fruit and vegetable export packing facilities, in Bamako and Sikasso. These are currently managed by the mango interprofessional organization. The facilities have failed to attract exports of other horticultural products, which means that the facilities have to amortize their investments over an export season of only four months. With the ending of government subsidies in 2015, the centers were forced to increase their charges, which threaten to induce some exporters to shift their packing to less suitable facilities. This could lead to the degradation of the quality of Malian mango exports, thereby damaging the reputation of all exporters.
- Lack of reliable statistics on production and planting intentions, which makes long-term planning for the value chain nearly impossible.
- The need for joint public-private management of disease and pest problems, such as the spread of fruit flies in West Africa.
- The lack of a national horticultural development policy, in contrast to government plans for the development of other sectors of agriculture, which might help address some of the above constraints.

All of these are issues that a dynamic interprofessional organization could help address. To date, Mali’s mango interprofessional organization has not demonstrated the capacity to do so, thereby limiting the growth potential of this otherwise promising contracting model.

4. RESULTS AND DISCUSSION

Looking across the 7 sets of case studies, 12 crosscutting results emerge.

1. **Partnership models require careful consideration of, and tailoring to, local environments.** There is evidence that various models of contracting can effectively link

smallholders to growing value-added markets in specific circumstances, but each needs to be tailored to a product and its underlying technology as well as to the physical, agro-climatic and policy environment. The mediocre performance and even failure of some models such as those of Olam-Nigeria, GADCO, and DADTCO-Ghana, which had received acclaim in the popular press as “A Holistic Approach to Tackling Low Agricultural Incomes” (Osei, 2012), demonstrate that the design and implementation of such approaches is neither easy nor automatic. There is also evidence that in certain environments, transaction costs and lack of appropriate supporting organizations such as cooperatives may exclude smallholders from growing markets (e.g. the case of the maize-poultry feed value chain linking southwest and north-central Nigeria). On the other hand, in certain circumstances, consistent with the theoretical literature discussed in section 2, disadvantaged groups may particularly benefit from contracting arrangements given their meager alternatives elsewhere (e.g., women block farmers in the Caltech nucleus farm in Ghana). Government policies clearly matter, as evidenced by the differing approaches promoted in Senegal, Côte d’Ivoire, Mali, Togo and Nigeria. Particularly important are a country’s legal environment regarding laws of contract and dispute resolution and the institutional mechanisms for local groups to organize themselves and be recognized as a legal entity.

- 2. Addressing missing markets in contract design fosters success.** Models are most successful when they attempt to relieve the most constraining missing or poorly functioning markets facing farmers. Reliable and stable output markets are one component, particularly for more perishable products, such as cassava and mangoes. But frequently farmers and other value chain actors face very severe constraints on the input side, and the degree to which contracting arrangements address these problems determines how effectively they attract and retain farmers. Among the most important of these constraints are weak markets for improved technology, frequently embodied in improved seeds and fertilizer; advisory services; credit; transport; insurance; and mechanization services, particularly in situations (such as in Ghana) where labor costs are rising rapidly. For example, across many of the studies, gaining access to fertilizer, improved seeds and crop protectants was a major incentive for farmers to participate in the programs. In several instances (e.g., the cassava and rice case studies in Ghana), contracts’ lack of provision of credit for hiring labor led some farmers to incur debts with local traders (“market women”) and then engage in side-selling to repay the debts. Farmers also reported that arrangements that paid the transport costs of their crops to the buying point (e.g., the MCRPMS rice contract and the DADTCO cassava contract) were a major attraction, supporting HYSTRA’s (2015) finding that convenience is an important contributor to contract success. The covering of transport costs also shifted the risk of post-harvest loss from the farmer to the buyer, as the buyer took on responsibility for the product after it left the farmer’s field. The models reviewed in the case studies varied widely in the degree to which they addressed such missing markets in a comprehensive manner. Some, such as the purchase agreements of the Malian and Burkinabé grain boards, focused solely on the output markets, counting on other public and private programs to address issues on the input side. The model of rice contracting being promoted in the Senegal River Valley had the most integrated approach to linking financing (for rice distributors and millers as well as farmers) to the output market contracts, but it is unclear whether the Senegalese government can and will devote the

resources needed to generalize this model widely. Overall, the case studies suggest that simply contracting on the output side without addressing the other missing markets is unlikely to boost farmers' incomes significantly in most cases.¹¹

3. **Improving farm-level productivity is a major contributor to contracting success and inclusion.** Not only is access to improved technology (e.g., improved seeds, cassava cuttings, and fertilizer) a major inducement to small farmers to participate in contracting, but it is also critical to holding down the unit costs of such partnerships for the buyer. Buyers across the case studies faced a major challenge of increasing the volume of raw product to feed into their agroprocessing plants or export enterprises. Two options exist for sourcing increased volumes from smallholders: increase the number of smallholders with whom the firm contracts or increase the production per smallholder. Holding other factors constant, the first option implies increased transaction costs for the firm, especially when farmers require significant training and monitoring to meet quality standards. This is why firms as diverse as MCOMPMS in the rice value chain in Ghana and SCS International in the mango export value chain in Mali have opted for a strategy of trying to improve the productivity of their contract growers.
4. **The structure and evolution of public-private partnerships matters.** The role that the public sector played in the various cases in linking smallholders to remunerative markets varied from helpful to detrimental, and the nature of that role changes over time. National and local governments can help equilibrate bargaining power between farmers and large processing firms, or they can favor one party over the other, as when they grant large firms use rights to great swathes of land without offering compensation to those who previously cultivated it. In the cases involving irrigated rice production (in Ghana, Mali, and the Senegal River Valley), the most common public-sector contribution was its investment in the basic irrigation infrastructure (a very large fixed investment) and granting the buying firm permission to operate within the publicly operated irrigation systems. In some cases (e.g. in Mali and Ghana), this also involved granting the firm a lease for a nucleus farm to complement production obtained from outgrowers. Public-sector investment in road infrastructure is also critical, as indicated by farmers' complaints in several of the cases about how the poor state of rural feeder roads made delivering product to contractors' buying points less attractive than selling locally. The public sector is also often involved in price setting — e.g., through provision of “objective” crop budgets to serve as a basis for price negotiation and, in some cases, involvement of public officials in those negotiations. In exchange for these contributions, the buying firm often offered extension services to complement those of the government and, in the case of Ghana, provided advance payments to public entities to help overcome their cash-flow problems. In Mali, public investments in export packing facilities played an important role in stimulating mango exports, but the transfer of these facilities to the private sector and their future financial sustainability is proving problematic. Another component of PPPs is government policy. For example, tax policies can act as

¹¹ Exceptions would be when: (a) farmers are facing very few buyers and the presence of contracts increases market competition for the output (which was one of the stated purposes of the buying schemes of the Malian and Burkinabé grain boards), and (b) when the contract leads producers to increase the quality of their output, giving them future access to higher-value markets. For this latter condition to occur, however, the contract likely needs to be coupled with technical assistance to farmers on improving product quality.

inducements to source locally from smallholders, as exemplified by the decisions of ABL and GGBL to begin manufacturing cassava-based beers following changes in Ghana's tax code. In some cases, as in Senegal, public financing agencies play a critical role in extending credit to make the contracting system viable, but the ability to expand and sustain such expenditures remains an open question. In other instances, as was the case with the Malian grain board, a public agency's contracting may serve as an "apprenticeship program", helping farmer organizations to learn the skills needed to aggregate and sell to other large institutional buyers. Public agencies, however, can also limit the success of efforts to link smallholders to new markets, as illustrated by the managerial and financial problems that the government-owned ASCo created for expanding the production of cassava-based beer in Ghana, as well as the apparent reluctance of the government to privatize the firm. The failure to follow through on previous government commitments (as in the case of input provision for Olam's outgrowers in Nigeria) and the absence of appropriate sectoral policies (as in the Mali mango case) also can present major obstacles to the success and growth of contracting arrangements with smallholders.

5. **Buyers' detailed knowledge of the value chain is critical.** Firms or farmer organizations seeking to contract with smallholders need a detailed understanding of the structure and functioning of the entire value chain in which they are operating, not just the level at which they are most immediately present. This was vividly illustrated by the case of DADTCO, which had a technological solution to a major aggregation problem in the Ghanaian cassava value chain (reducing the bulkiness and perishability of the roots through use of its mobile processing unit—a technology that the company had successfully deployed in Mozambique). What it did not seem to understand was that in Ghana, its sole customer, ABL, employed a different brewing technology than that used in Mozambique and had an alternative source of high-quality processed cassava product (starch from Caltech) and hence could impose tighter quality specifications on DADTCO, leading to the collapse of its program. On the positive side, SCS International's firm understanding of the tight and frequently changing quality standards of its clients in Europe for fresh mangoes and its ability to communicate those standards to its growers has been one of the reasons for its success thus far.
6. **Buyers' knowledge of the capacities and constraints facing the farmers and farm organizations with whom they contract is also critical.** This includes knowledge of the farmers' and their organizations' output potential, ability to meet quality standards, input needs, aggregation and transport challenges, and their general aspirations. The Mali cereals case studies provided some positive examples of how contractors identified and responded to such challenges. These included a rice processor who provided access to irrigated land to land to several farmers, a food processor who mentored a farm organization on improving the quality of its cereals, a maize processor who provided access to a threshing machine and transport at the village level, and service providers who moved increasingly into facilitating output marketing.
7. **The financial and human resources a buyer brings to the partnership can be critical in helping overcome weaknesses of other partners.** For example, GGBL's willingness to use its financial resources to pre-finance ASCo's expenses was critical to ensuring that the plant could obtain a regular supply of cassava roots and keep its plant maintained. In the case of the exports of Malian mangoes, the quality of the human resources of SCS

International were critical in helping small-scale orchard owners master the techniques necessary to become Global Gap and Organic certified producers.

8. **Flexibility in pricing and delivery obligations make contracts more attractive but impose costs.** Some buyers, such as the Ghanaian rice processor MRCMPS and all the millet and sorghum buyers studied in Mali, consistently paid a premium over market prices to ensure delivery and quality. Several rice and cassava processors specified that after farmers had delivered enough product to repay in-kind the inputs they had received on credit, they were free to sell to any buyer. Farmers appreciate both clauses, but they are not costless. MRCMPS's ability to offer above-market prices is due in part to the margins it earns in the production of value-added rice-based products like cookies and rice flour. The millet and sorghum buyers who paid premiums in Mali were either institutional buyers or a processor serving higher-end segments of the market. In contrast, WIENCO/Copa-Connect, which just markets milled rice, adjusts previously agreed-to prices for paddy only rarely. Similarly, while allowing growers to sell to any buyer after credit has been repaid is attractive to farmers, it makes it more difficult for the buyer to assure that its processing facilities operate near capacity.

9. **Contract breaches can be instigated by both farmers and buyers, and tradeoffs exist in how to deal with them.** Problems of contract breach, such as farmers' side-selling leading to non-repayment of credit, are inherent when the buyer has more specialized assets at risk than do farmers, as is typical in cereal value chains, but less so in perishable and tree crops. Buyers, however, also sometimes breach contracts, and this is most harmful to farmers when they have invested in meeting the buyer's quality specifications and alternative buyers are either unavailable or unwilling to pay a premium for the product. While contract design, including terms such as profit-sharing, flexible formulas that adjust prices based on current market conditions, and making contract renewal each season contingent on past performance, can improve incentives for compliance, it does not eliminate problems of contract breach. Monitoring and reliance on reputation and social ties are further enforcement tools, with some buyers reinforcing the social ties through contributions to smallholders or their communities for schools, health clinics or to face household emergencies. Frequently, these informal elements substitute for more formal contract structures as trading partners gain more experience with each other and move to more relational contracting. But reliance on such tools becomes impractical when the number of contracting farmers become large, as illustrated by the Malian cereals cooperatives that have developed more formal contracts with their members as the organizations expand their membership but still report side-selling as a major problem. The case of MCRPMS illustrates the limits of reliance on reputation. The proprietor of this Ghanaian rice processing firm, after a bad experience with widespread contract breach when contracting with a large number of farmers, restricted her contracts to seven farmers whom she knows well and with whom she has strong social ties. She operates largely on the basis of verbal agreements and reports no problems with contract breach, but this approach likely limits future expansion of her firm. Similarly, the large maize producer/aggregator studied in north-central Nigeria extended credit to a relatively small number of medium-sized farmers and relied on his strong social ties in the community to ensure enforcement of the agreements. In contrast, WIENCO/Copa-Connect operates through formal written contracts with hundreds of farmers but expends a large amount of resources (through field staff visits, laboratory tests, etc.) to monitor compliance. Indeed,

WIENCO representatives interviewed in the case study argued that GADCO's failure to invest enough in monitoring led to the failure of its effort and its subsequent takeover by WIENCO, which is implementing the same basic model, but with much stricter monitoring and enforcement.

10. Intermediary aggregators are often key to the success of the system. Monitoring is costly in part because of information asymmetry between the buyer and the seller, particularly concerning which farmers are creditworthy and who can be counted on to follow recommended practices. Because buyers are often not close to farmers (either geographically or socially), this creates a market opportunity for intermediaries who know the farmers better and who may have specialized logistical skills and capacities to act as product aggregators for the agroprocessor or exporter. Sometimes these aggregators are farmer organizations (as in many of the Mali cereals cases), frequently supported by development partners to strengthen their capacity to play this role. But often they are private entities, either engaged directly by the buyer, as in the case of MAXPO, which aggregates cassava roots for ASCo; or arising on their own to seize a profit opportunity, as did the Local Buying Agents who aggregate and sell paddy to Olam in Nigeria. Wholesalers and village-level farmer organizations can together provide intermediary aggregation, as in one case in Mali where a wholesaler pays a premium to local farmer organizations for high quality millet and sorghum, and takes responsibility for picking up and delivering aggregated volumes to institutional buyers. Structuring the incentives of these intermediaries so that they are consistent with the interests of the other parties in the contract is critical, as illustrated by SCS International's efforts to move from a system of independent custom harvesters/aggregators (pisteurs) to grower-aggregators.

11. Tradeoffs remain regarding land-tenure and “agribusiness vs. family farms.” Contracting with West African farmers takes place in a political atmosphere where farmer and civil-society groups often voice strong concerns about “land grabs” and the domination of family farms by large agribusinesses.¹² All contracting involves farmers trading off some autonomy for the benefits offered by the contract. Yet the various models studied vary sharply in the degree to which farmers are involved in their daily business and production decisions. At one extreme is the rice development approach of Côte d'Ivoire, where a single firm directs irrigated production in its specified zone. While farmers retain use-rights to their land, their options if they want to produce paddy are severely restricted by the dictates of the company, leading critics to charge that even as rice production and farmers' incomes rise, the farmers are being converted into a proletariat working for a local monopsonist. In contrast, the co-managed rice contracting systems of the ESOPs in Benin and Togo involve farmer organizations as co-owners in the buyers' business decisions, yet these models seem to be heavily dependent on external support for their continuity. Most of the programs involving nucleus farms have opted for long-term leases from local communities or their customary leaders, but this has not obviated land-tenure concerns, as such leases frequently displace farmers who were previously cultivating that land. Caltech's strategy of engaging those farmers not as hired laborers but as block farmers on its nucleus estate appears to be one way or reducing

¹² See, for example, Hollinger and Staatz (2015), Focus Section B, pp. 311-14.

tensions over the land acquisitions while at the same time avoiding the incentives for shirking that frequently accompany a hired agricultural labor force.

12. Collective action among participants is critical but takes time to develop. The various models examined in these studies all require value-chain participants to work together more closely than they have in the past. For models of aggregation that involve farmer organizations, this means building the capacity of such organizations to develop and implement contracting, quality control and contract compliance arrangements. As the Mali cereals and Benin-Togo rice contracting case studies illustrate, building such capacity is a very long-term process, typically longer than the three-to-five-year project cycles of most development partners. It often involves iterative training and capacity building, and assistance accessing both operating capital and capital for long term investments. But as the mango export case study illustrated, when a value chain is not dominated by a single firm, there are also frequently system-wide vertical coordination challenges beyond the scope of a single entity to address. In such cases, collective action along the entire value chain becomes essential, for example, through the development of an effective interprofessional organization. Experience has shown that developing such organizations is a long-term process that requires both supportive government policies and the development among the value chain participants of a vision and attitude of “co-opetition” (Brandenburger and Nalebuff, 1996) — one in which they may be rivals at a certain level within the value chain but where they can come together and work collectively to address system-wide problems. As with the case of developing effective farmer organizations, developing such value-chain-wide organizations takes considerable time and effort.

5. CONCLUSIONS AND POLICY IMPLICATIONS

For reasons elaborated above, the types of partnership models with smallholders discussed in this paper will need to grow over time if these farmers are to be linked effectively to growing value-added markets for West African agricultural products. But the analysis shows that there is no single dominant model that works in all situations. Rather, the arrangements need to be tailored closely to the product, its production system, and the socio-economic, political agro-climatic environment. Consistent with transaction-cost theory, the case studies examined here revealed that tighter forms of contractual agreements were more predominant where both parties had specific assets at risk and were more locked into a given production system (cf. mangoes vs. rainfed cereals). But models for the same crop also varied depending on the approaches historically favored by political leadership in different countries. For example, although most countries rely on some form of PPP to develop contracting in their irrigated rice sectors, Senegal’s strategy relies on state agencies to play a stronger role in coordinating the value chain than does that of Togo, Benin and Mali, which is more farmer-led; or that of Côte d’Ivoire, which places a greater reliance on large agribusiness firms to coordinate the system. The degree to which different countries develop processes to deal with the sensitive land-tenure issues surrounding the leasing of large areas for nucleus farms or develop arrangements such as Caltech’s block-farmer (“in-grower”) strategy to dampen those tensions will also condition the types of contracts that evolve.

One of the key attractions to farmers of contracting is that it can help to fill gaps left by weak or missing markets, typically for key inputs, such as credit, improved technology embodied in

inputs such as improved seeds and fertilizer, mechanization and advisory services, and insurance. A crucial part of designing and implementing successful partnership contracting models, including PPPs, is therefore doing a careful prior analysis to: (a) identify which are likely the most important missing-market constraints facing farmers and other value chain participants, (b) analyze how these are likely to evolve in the future (e.g., growing demand for mechanization services as local wage-rates rise) and (c) identify which party or parties will take the lead in helping fill those gaps. As the Olam rice case from Nigeria illustrated, getting firm commitments to deliver on those promises is also critical to contracting success.

Two of the most important weak or missing markets facing smallholders, as revealed by the case studies, are for both short- and medium-term financing and for access to improved technologies. Failure to address the financing needs of small farmers, who frequently face serious cash-flow constraints, is a major cause of side-selling. Buying firms need to help address this constraint, either directly (as some of the case-study firms did) or through working to support efforts of others to do so. As discussed earlier, improving access to improved technology to raise farm-level productivity is crucial to buyers' success in contracting as well as that of the farmer. In designing contracting systems for smallholders, a range of options need to be considered, including private extension efforts by the agroprocessor or exporter, use of nucleus farms as experimental and training centers for small farmers as well as sources of additional output for the firm, and various forms of joint research and extension efforts by the buying firm with the public sector and/or NGOs.¹³

The case studies also reveal that government policies can either crowd-in private investment in ways that favor contracting with small and medium-scale farmers (as in the case of Ghana's modification of its tax laws to favor greater local content in food manufacturing) or crowd it out (as exemplified by the poor performance of the government-managed ASCo, which limited expansion of the market for cassava). One area where farm groups as well as some agroprocessors have pressured West African governments to modify their policies has been in the area of trade, arguing for import restrictions to protect domestic producers and processors. These calls have been particularly strong in the rice sector (Hollinger and Staatz, 2015). Senegal has taken some steps in this direction by tying import licenses for rice to distributors' having purchased a certain amount of domestic production. The scope for such protection, however, is very limited. Urban consumers pressure governments to hold down the prices of basic necessities, and the adoption of the ECOWAS common external tariff regime in 2015 limits individual West African countries from acting unilaterally on trade (ibid.). Therefore, policies to promote more contracting with smallholders will need to focus primarily on how they can boost system-wide productivity and reduce transaction costs.

The cases also revealed that only a few successful contracting systems on a large scale involve the buying firm contracting directly with individual farmers. Typically, larger firms rely on some sort of intermediary to act as a contracting interface with the farmers. Often these are farmer organizations, but many are also private individuals or firms. While many projects aimed at promoting smallholders' links to markets have focused on strengthening farmer organizations to play this role, attention also needs to be given to the potential contributions of private aggregators, including how to improve their productivity and incentives so that they are not antithetical to those of the small farmers or the contracting firm. However, even when private aggregators are relied upon to accumulate product, strong producer organizations are needed to help facilitate monitoring and information flows and to

¹³ For case studies of different approaches to private and PPP-led extension services, see Zhou and Babu (2015).

represent farmers' interests in contract negotiation, particularly in situations where, as in the Ivoirian irrigated rice system, they are likely to face local monopsonists.

In situations where no single firm dominates the entire value chain, there is a need to strengthen value-chain-wide organizations, such as interprofessions, to address system-wide constraints that limit expansion of contracting with smallholders. These organizations could help develop and share information on industry structure, the evolving nature of final consumer demand, farmers' alternative market channels and buyers' alternative sources of supply. Such information would be extremely helpful in communicating to producers the attributes their products need to meet to be attractive to buyers and the contract provisions (particularly concerning timeliness of delivery and minimum quantities needed) to be competitive. Building such organizations is likely to require a long-term commitment from governments, development partners and the private sector, as these organizations require both technical skills and a fundamental change in the vision of many value-chain actors.

Finally, and perhaps obviously, implementation of the contracting and aggregation strategies is at least as important as their design, as illustrated by the GADCO-WIENCO experience. Effective implementation requires strong technical knowledge of the value chain and of the social environment in which it is embedded, and a willingness to evolve the partnership as the environment changes over time. Many of the most effective contracting systems studied relied on strong social ties (often strengthened by the buyer making contributions to the local community or individual farmers in their times of need) to induce respect of the agreements' terms. Flexibility in adjusting previously negotiated prices to meet local competition and in renegotiating input loans also builds farmer loyalty, but requires large enough margins and cash flow on the part of the buyer to sustain. It therefore is most likely in products linked to higher value-added markets that generate those margins than in bulk commodities like rainfed cereals. But beyond social ties, firm enforcement of standards required by the final buyer is critical. In the words of the director of the Malian mango-exporting firm studied, "in this business, there is no room for doing things 'approximately.'"

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**APPENDIX
LIST OF ACRONYMS**

ABL	Accra Brewery Ltd.
AMPU	Autonomous Mobile Processing Unit
ASCo	Ayensu Starch Company
ATA	Agricultural Transformation Agenda [Nigeria]
CIDR	Centre International de Développement et de Recherche
CNCAS	Caisse Nationale du Crédit Agricole du Sénégal [National Agricultural Credit Fund of Senegal]
DADTCO	Dutch Agricultural Development and Trading Company
ECOWAP	ECOWAS Agricultural Policy
ECOWAS	Economic Community of West African States
ESOP	Entreprise de Service et Organisation des Producteurs
ETD	Entreprise Territoire et Développement
GADCO	Global Agricultural Development Company
GGBL	Guinness Ghana Brewery Ltd.
GIDA	Ghana Irrigation Authority
HQCC	High Quality Cassava Cake
HQCF	High Quality Cassava Flour
LBA	Local Buying Agent
MCRPMS	Mawuwoe Cooperative Rice Processing and Marketing Society Ltd.
MoFA	Ministry of Food and Agriculture [Ghana]
MT	Metric ton
NIE	New Institutional Economics
NGO	Non-governmental organization
OPAM	<i>Office des Produits Agricoles du Mali</i>
PAU	<i>Politique Agricole de l'Union</i> [the agricultural policy of WAEMU]
PPP	Public Private Partnership
SAED	Société des Aménagements et d'Equipements pour le Développement [Senegal]
UEMOA	Union Économique et Monétaire de l'Afrique de l'Ouest [WAEMU in English]
WAEMU	West African Economic and Monetary Union [UEMOA in French]