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Why do agribusiness firms simultaneously source from different contract farming arrangements? Evidence from the soybean industry in Malawi

RESEARCH ARTICLE

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Abstract

This paper describes and analyzes the rationale for concurrent use of different contract farming arrangements (CFAs) by a large agroprocessor. We postulate that plural governance is determined by ambiguity over the best mode of coordination, complexity of transactions and strategic behavior by the agroprocessor. We carried out an in-depth case study of an agroprocessor that has multiple CFAs in the soybean industry in Malawi. We find that ambiguity explains the formation of plural governance structures, but strategic behavior is the main motivation for their persistence. Hence, the study findings unite hitherto opposing schools of thought on the stability of plural forms. The results imply that the incentives and disincentives of agribusiness firms to source through different CFAs should be considered in designing policies and programmes to promote contract farming.

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1. Background

Contract farming is a commercial agreement between a farmer and an agribusiness firm for the production and supply of agricultural products. The agreement usually includes the provision of production support by the agribusiness firm, and a commitment on the part of the farmer to sell pre-defined quantity and quality of produce to the firm. The ways in which agribusiness firms work with farmers vary widely. Some contract farming arrangements (CFAs) are characterized by simple informal agreements with little or no production support and minimum intervention in the farming process by the agribusiness firm. However, there are also complex production contracts where farmers participate like quasi employees (Oya, 2012). In between these extremes, a variety of CFAs can be found, each designed to fit unique production and trading conditions.

The available literature on CFAs mainly focuses on the farmer perspective on two main questions. A first body of literature studies farmer preferences for contract terms and conditions (e.g. Abebe *et al.*, 2013; Lajili *et al.*, 1997; Ochieng *et al.*, 2017; Roe *et al.*, 2004; Saenger *et al.*, 2013). A second strand of literature focuses on the welfare effects of smallholder participation in CFAs (e.g. Barrett *et al.*, 2012; Bellemare, 2012). The assumption in both these streams of literature is that the transaction costs faced by farmers determine their willingness and ability to participate in high value agri-food chains (see for example Holloway *et al.,* 2000; Winters *et al.,* 2005). However, in the context of modern buyer-driven agri-food supply chains, contract farming is usually instigated by the firm (Bijman, 2008) and the participation of smallholders is more a function of the procurement decisions of buyers than of the market choices of farmers (Jaffee *et al.*, 2011). As such, it is more relevant to focus on the sourcing decisions of agribusiness firms rather than the preferences of farmers.

The few early studies that took an agribusiness perspective to contract farming shed light on the agribusiness firms' motivation to either contract-out, vertically integrate, or use spot markets (e.g. Key and Runsten, 1999; Sartorius and Kirsten, 2005). An emerging body of literature has begun to focus on why agribusiness firms concurrently source from spot markets, contracts and internal production (e.g. Carrer *et al.*, 2014; Mello and Paulillo, 2010; Vinholis *et al.*, 2014). The concurrent use of different forms of organization for similar transactions (i.e. spot markets, contracts or internal production) in the same competitive and institutional environment,[1] has not received much attention in the empirical literature. An exception is Feltre and Paulillo (2015) who investigated the concurrent use of different forms of coordination in hybrid arrangements (contracts) in the Brazilian sugarcane sector. The authors found that the concurrent use of different forms of coordination by sugar buyers was motivated by the differential age of the planted sugarcane (the younger the crop, the longer the contract duration), uncertainty of supply and the need to adapt to different institutional environments.

Evidently, it is costly for the agroprocessor to set up and manage transactions with multiple CFAs. Initially, the firm incurs fixed transaction costs, which are 'the specific investment made in setting up institutional arrangements' (Furubotn and Richter, 2005: p. 51). After setting up various CFAs, variable transaction costs are incurred, the level of which depends on the frequency and volume of transactions (Key *et al.*, 2000). These include the costs for identifying and selecting capable farmers, drafting, negotiating and signing contracts for each CFA. Once the multiple CFAs are in place, monitoring and enforcement costs are incurred to ensure that the agreed-upon terms are complied with for each arrangement, and transfer costs are incurred when shifting property rights for the agricultural product. Additionally, the firm makes investments in social relations (Furubotn and Richter, 2005) to establish goodwill and trust, stimulate cooperation and enhance its reputation with farmers in each CFA. Given these extra costs of contracting, it is pertinent to ask why the agribusiness firm uses different CFAs to coordinate similar transactions for the same commodity in the same

[1] We highlight that different forms of coordination are employed in the same environment to distinguish from situations in which the agribusiness firm may adopt different forms for different environments because of peculiar culture, rules, laws, agricultural systems etc. (as, for example, in Asano-Tamanoi, 1988; Porter and Phillips-Howard, 1997).

competitive environment. This paper attempts to explain the reasons for this phenomenon, which Bradach and Eccles (1989) coined as 'plural forms' (of governance).

The main objectives of the present study are: (1) to identify and distinguish the different CFAs that are used to coordinate transactions by an agroprocessor; and (2) to analyze the rationales of the agribusiness firm to concurrently source through different CFAs. To achieve these objectives, we carried out an in-depth qualitative case study involving interviews with senior management of a large agroprocessor that has multiple CFAs in Malawi. While the main motivation of the agribusiness firm to initiate a CFA has been claimed to be to improve the supply of high quality produce and to increase capacity utilization of specific assets (Bijman, 2008), a closer look at the firm's rationale for concurrent sourcing may reveal other factors that affect its procurement strategy. Eventually, an understanding of the firm's procurement decision is important in designing policies and interventions that promote and influence the outcomes of contract farming (Key and Runsten, 1999).

The remainder of the article is organized as follows. Section 2 presents the theory and conceptual framework. Section 3 provides the methods and Section 4 presents the results and discussion, while Section 5 concludes.

2. Theoretical and conceptual framework

2.1 Theoretical explanations of plural governance

Economists have primarily used transaction cost economics (TCE) as the theoretical approach for understanding the organization of agricultural transactions. TCE focuses on the costs of alternative ways of organizing transactions between buyers and sellers. The unit of analysis is the transaction, which occurs each time a good or service is transferred between seller and a buyer.

According to TCE, transactions come with costs and to reduce these costs the transacting parties choose a governance structure. Using the TCE lens, a CFA can be conceptualized as a specific form of governance structure that is chosen to reduce transaction costs. The main attributes of the transaction that determine of the level of transaction costs are asset specificity and uncertainty (Williamson, 1985). The central proposition of TCE is that economic actors seek to 'align transactions, which differ in their attributes, with governance structures, which differ in their costs and competencies, in a discriminating (mainly, transaction cost economizing) way' (Williamson, 1991: 79). In other words, TCE asserts that economic actors will choose, among alternative ways of organizing transactions, a governance structure that minimizes transaction costs.

According to Williamson (1985), there are three basic governance structures:

1. Spot market – used for non-specific transactions, where the identities of the exchange parties are irrelevant and there is no willingness to establish an on-going relationship. In this governance structure, market participants adjust autonomously to changing circumstances and information is transmitted through the price mechanism.
2. Hybrid forms – used for recurring transactions, where one or both parties have specific assets thus necessitating the building of trust between the exchange parties. In this format, contracts are used since the exchange parties want to formalize an on-going relationship.
3. Vertical integration or hierarchy – used for regular transactions, where highly specific assets are involved. In this governance structure, the transactions and all relevant assets are under unified ownership.

The classical TCE view did not consider the possibility that a firm can use more than one governance structure concurrently. Bradach and Eccles (1989) were the first to highlight that in contrast to the classical TCE approach '[...] distinct organisational control mechanisms operate simultaneously for the same function by the same firm' (p. 112). Since then, many studies have confirmed Bradach and Eccles' observation, including in agri-food chains (e.g. Brousseau and Codron, 2000; Carrer *et al.*, 2014; Feltre and Paulillo, 2015; Mello

and Paulillo, 2010; Mizumoto and Zylbersztajn, 2004; Nogueira and Zylbersztajn, 2004; Vinholis *et al.*, 2014; Zylbersztajn and Nogueira, 2002). These findings challenge the mainstream TCE discriminating alignment hypotheses, which asserts that different kinds of transactions are more efficiently governed by specific governance structures in a cost-minimizing way.

Recent years have seen attempts by scholars to modify or extend the classical TCE model in order to capture the phenomenon of plural forms. Mols and Menard (2014) extended the classical transaction cost model by incorporating variables from neoclassical and resource-based theories, which focus on production costs. The extended transaction model helps to analyze the efficiency of plural forms compared to alternative governance structures. Schnaider *et al.* (2018), on the other hand, revised the basic transaction cost framework by differentiating sources of uncertainty (market, technological and performance assessment uncertainties), thus making it possible to predict and explain the existence and variety of plural forms. Finally, based on case studies in Brazilian agriculture, Ménard (2013) proposed an extended TCE framework that includes ambiguity about the best mode of coordination, complexity and strategic behavior as additional transaction attributes that necessitate the use of plural forms.

Three schools of thought have emerged to explain the phenomenon of plural forms of governance. The first school of thought attributes the coexistence of many governance forms to the different attributes of transactions. In this view, if transactions differ in terms of specificity of assets, uncertainty or frequency, then more than one governance structure may be used simultaneously. Moreover, plural forms strengthen the firm's bargaining power, and they reduce information asymmetries in the exchange relationship, thus act as a safeguard against opportunism. This explanation is consistent with the model by Williamson (1991), which posits that different mechanisms are used to govern transactions that differ in at least one attribute. Mols (2000) and Parmigiani (2007) found empirical evidence that the concurrent use of different governance forms is explained by different levels of specific assets, uncertainty, frequency of transactions, the need to lower costs and prices and to learn from suppliers.

The second school of thought builds on the arguments of the first school, but views plural forms of governance as temporary. As adjustments occur, it is argued that the most efficient form of governance will prevail, as predicted by Williamson (1996)'s discriminating alignment hypothesis. Thus, plural forms of governance are due to temporary situations of disequilibrium in the movement from one (inefficient) form towards an efficient form governance. The transition from one form to another may be caused by changes in transaction attributes, the existence of non-transferrable procedures in the firm or as an adjustment to changes in the institutional environment (Zylbersztajn and Nogueira, 2002).

Finally, the third school of thought argues that plural forms are stable and constitute a key strategy for the firm to coordinate transactions. This is evident in the complementarity of governance forms. Brousseau and Codron (2000), for example, studied the supply of off-season fruits to French supermarkets and found that plural forms helped the distributors to manage uncertainty in the quality and quantity of production and enabled learning in one governance form to be used in another.

In summary, TCE explains plural governance in terms of transaction characteristics. Thus, to understand why different CFAs coexist for carrying out transactions between the agribusiness firm and the farmers, one must study the characteristics of the transactions, including the characteristics of the commodity, the production process, and the transaction partners (Bijman, 2008).

2.2 Transactions involving soybean production

The transaction we study in this paper is the contracting-out of soybean production to smallholders by a large agroprocessor. Smallholder soybean farmers sell their produce either through traders or directly to the agroprocessor. Most of the demand for soybeans is for manufacturing of edible oils and animal feed for the domestic and export markets, which are expanding due to the increase in population and urbanisation.

From the perspective of the agribusiness firm, the outsourcing of soybean production is risky for several reasons. First, soybean production requires intensive cultivation practices like proper land preparation, appropriate seed variety, timely planting and harvest, application of inoculants and fertilisers, and ensuring good nitrogen supply (Orf, 2008). Applying soybean cultivation practices involves several trade-offs. For example, increasing fertiliser use to improve yields often results in lower protein content (Paulsen, 2008). Second, soybeans are self-pollinating, thus farmers may prefer to save costs by recycling seeds, or sell seed provided by the firm instead of utilizing approved seed which has higher germination rate and quality. Third, soybean is susceptible to various diseases caused by fungi, bacteria and viruses. In Africa, soybean rust, a disease which is spread through wind currents, has been singled out as the biggest cause of yield losses (Dean *et al.*, 2012; Murithi *et al.*, 2015). An outbreak of soybean rust can have significant economic impact as yield losses can be up to 100%, thus affecting supply volumes and prices for the firm (Goldsmith, 2008). The uncertainty with managing soybean rust is heightened because smallholders have limited resources to effectively control the disease, and research into disease-resistant varieties is constrained by weak intellectual property protection. Thus, there is an ever-present probability of a soybean rust outbreak each year. Fourth, it is difficult or costly to determine whether soybeans are free of genetically modified organisms (GMO) at delivery, and yet this is an important attribute for the agroprocessor's customers. The presence of unobservable quality variables gives the farmer greater latitude for quality cheating (Wolf *et al.*, 2001).

The complex nature of soybean production exposes the agroprocessor to transaction costs, such as the costs of searching and identifying farmers who fit the firm's criteria, monitoring and enforcing contract compliance. Ultimately, the high cost of searching for able farmers, managing and monitoring them, and the likelihood of hold-up calls for an institutional arrangement that sufficiently reduces transaction costs. One or more CFAs may be such an institutional arrangement, as it allows the agroprocessor to choose participants and to include terms and conditions that protect its specific investments and reduce uncertainty, thus economizing on transaction costs.

2.3 Conceptual framework

Our conceptual framework explains why the agribusiness firm employs different CFAs concurrently to coordinate similar transactions in the same institutional environment. In order to understand the motivation for the agribusiness firm to employ plural governance, we use the framework proposed by Ménard (2013). Based on findings from 17 detailed case studies on the organization of the agri-food industry in Brazil and Europe, the author identified three factors that motivate agribusiness firms to choose plural forms: 'ambiguity surrounding the fitness of a mode of organisation for the transaction in question; complexity of a transaction or a set of transactions; and strategic behaviour' (p. 124), which we discuss individually below.

- *Ambiguity*

Ambiguity relates to the difficulty to precisely assess the potential costs and benefits of adopting one or other governance structure. When the costs and benefits of handling the transaction's characteristics cannot be evaluated adequately, it is difficult for the firm to determine the marginal advantages of controlling its use through one mode of organization or another (Ménard, 2013). A key characteristic that exacerbates ambiguity is volatility of supply and demand (e.g. caused by disease outbreak or bad weather) which in turn motivates the firm to combine different forms of coordination to reduce volume uncertainty. In this situation, the adoption of plural forms enables the firm to guarantee delivery of a certain quantity and quality.

Ménard *et al.* (2014) provide an example that demonstrates how ambiguity determines plural forms. In the Brazilian context, the authors observed that the sensitivity of organic lettuce to bad weather makes it difficult for the firm to guarantee stable supply. The uncertainty generated by this characteristic of the commodity prevents the firm from contracting a single producer (and obtain economies of scale), and yet contracting many dispersed producers is impractical due to its perishability. In this case, plural governance

of the transaction for organic lettuce was chosen as it allows the firm to reduce uncertainty and guarantee its clients a minimum supply of organic lettuce.

In the literature, the number of producers, occurrence of contract infringements, predictability of supply and demand, and difficulty of product quality measurement have been used to operationalize ambiguity in transactions (e.g. Silveira *et al.*, 2015). However, these existing measures are more suited for operationalization of the concepts of demand, behavioural and performance uncertainty in standard transaction cost theory. In this paper, we operationalize ambiguity through two measures: commitment to customers or suppliers, and difficulty of determining the exact costs and benefits of alternative ways of coordinating transactions. When the agroprocessor has committed to supply its customers with a certain quantity and/ or quality (e.g. by entering into forward contracts with its customers), failure to maintain that commitment may have serious consequences to the firm in terms of loss of business and reputation. The agroprocessor may also have a commitment to suppliers or other parties (e.g. donors or government). This situation disfavours relying on one CFA for the supply of the commodity. Therefore, the agroprocessor will seek to minimize its risk of non-compliance through plural sourcing. Lastly, the plural forms are likely to persist if the firm cannot precisely determine the costs and benefits of the alternative sourcing arrangements (Menard, 2013).

■ *Complexity*

Complexity arises from the connectedness of factors that affect a transaction, which generates uncertainties as to the most efficient mode of organization to monitor it. In this case, the difficulty is not one of accurately assessing the costs and benefits of specific assets, but rather how to adequately monitor the transaction. Carrer *et al.* (2014), for instance, provide an example of how the Brazilian meat industry adopted plural forms as a way of controlling those factors, such as the institutional environment and traceability requirements, that are important for access to the stricter EU market.

Following Silveira *et al.* (2015), complexity is analyzed using four indicators: the existence of different ways to produce soybeans, technological change in the input production process, critical steps to coordinate the production process and the variability in the quality of farming inputs. We expect that high diversity of production methods, accompanied by rapid technological changes in input production, a high number of critical steps in the cultivation process and high variability in product quality generates monitoring problems in transactions. In this case, the firm is likely to employ plural forms so as to reduce the informational asymmetry and contracting costs.

■ *Strategic behavior*

Strategic behavior refers to the firm's approach to organizing specific transactions. Here, the firm adopts plural forms in order to reap the benefits from synergies between forms of coordination, which reduces transaction costs. One can think of situations where the farmers have significant information advantage over the firm, such that problems of control and adequate incentives emerge. In such cases, employing plural forms works as an information-revealing mechanism that gives the firm a comparative advantage in negotiating with farmers, thus increasing its capacity to extract rents from in the relationship. Carrer *et al.* (2014), for example, demonstrate how agribusiness firms in the Brazilian meat industry procured in spot markets and through forward contracts and also used own farms to reduce dependence on a few suppliers, increase bargaining power, obtain greater flexibility in adjusting to changes in demand and to exploit synergies between different forms of coordination. In addition, there may also be incentives for the firm to source from multiple CFAs where there is a market or political advantage to be gained from doing so, whether because final consumers value the support given to small farmers (e.g. with fair-trade products) or because government and donors provide grants or subsidies to buyers who source from smallholders. Lastly, the firm may engage in concurrent sourcing to gain experience and use knowledge obtained in different governance structures to enact improvements across its supply chain.

Following Silveira *et al.* (2015) strategic behavior is operationalized through three measures: farmers' characteristics, competition level of the industry, and aspects related to company's purchase decisions. The characteristics of the farmers (e.g. membership of a producer organization), the intensity of competition in the industry and the firm's supply chain strategy have important implications for the firm's bargaining power, its ability to employ plural forms, and to take advantage of the potential complementarities of forms of coordination.

3. Methods

3.1 Study context

The demand for soybean has increased rapidly across eastern and southern Africa in recent decades, spurred by the expansion of the animal feed industry and aquaculture (Murithi *et al.*, 2015). In Malawi, soybean has also emerged as a popular smallholder oilseed and pulse crop, particularly in the context of the government's National Export Strategy (NES) and the Agricultural Sector Wide Approach Strategic Plan (ASWAP). More than 90% of the national soybean production is by smallholders. Between 2002 and 2013, production increased from 29,958 metric tons (MT) to 109,372 MT, slightly below the national annual demand of 111,000 MT (MoAFS, 2013). However, despite the increase in production, soybean yields remain low as farmers obtain 800 kg per hectare (ha) against a potential yield of 2,000-2,500 kg/ha. An important barrier in increasing yields is the low utilization of inoculants by farmers, due to ignorance of the benefits and missing input markets. Inoculants facilitate the bonding of seeds and nitrogen in the soil, thus enhancing soybean growth, grain quality and yields. Another barrier is related to the low use of certified soybean seed. Certified seeds have higher germination and yield reliability, compared to farmer-saved seeds.

According to the management of the focal agroprocessor, there is no structured trading system for soybeans in Malawi. In volume terms, more than 50% of the raw soybean is supplied by middlemen traders who source from individual small-scale producers at farmgate, consolidate purchases and then sell to agroprocessors. The agroprocessors source the remainder through contracts with small, medium and large-scale farmers, and from the commodity exchange market. Several non-governmental organizations (NGOs) have also constructed warehouses in producing districts, thus assisting farmers to aggregate and store their produce for sale to middlemen traders and agroprocessors when the prices are favourable.

Contract production has existed in the Malawian agriculture for a long time, particularly in the tea, sugar and tobacco sectors. Beyond these crops, agribusinesses have been traditionally reluctant to participate in contract farming due to high costs of bank loans, high farmer default and rampant side-marketing. Since the political reforms of the 1990s, smallholder farmers in Malawi have acquired a reputation of non-payment of loans (Kumwenda and Madola, 2005). Farmers default sometimes because of a production failure or simply because they had sold the produce to competing buyers, partly to get immediate cash and also to avoid repaying debts (Repar *et al.*, 2018). Agribusiness firms were also fearful of market instability and potential losses due to the volatility of the local currency. On the other hand, farmers are also reluctant to enter into contracts due to bad experience with buyers (Kumwenda and Madola, 2005). For example, companies often break the contract by failing to deliver farm inputs and services at the correct time, refusing to receive produce or arbitrarily raising quality standards and delaying payments. The absence of strong legal systems, poor banking services in rural areas, the lack of collateral held by smallholder farmers and weak insurance systems also create a considerable risk for firms and farmers entering into contracts (Repar *et al.*, 2018).

Over the past decade, buyers and agroprocessors have cautiously reintroduced a variety of CFAs in order to guarantee consistent supply of raw produce. These new contracts are mainly delivered through producers' organizations. Agribusiness firms, producer organizations, producers, donors and the government all believe that the basis of sustainable contract farming lies in a gradual, experimental approach to identify committed and able farmers and establish mutual trust and confidence (GoM, 2010).

3.2 Research design

The study adopts a qualitative and exploratory approach, because there is a lack of research on how agribusiness firms choose alternative suppliers in the context of modern buyer-driven agri-food chains (Jaffee *et al.*, 2011). Moreover, the 'how' and 'why' type of research questions in this study call for an exploratory approach (Yin, 1989).

We chose the specific case because the agroprocessor had multiple CFAs. A case study research design was chosen because it allows the researcher to go inside the agribusiness firm and learn first-hand the unique strategic and tactical forces that motivate CFA choice. Face-to-face interviews with key informants using a semi-structured questionnaire were preferred because exploring CFAs requires establishing trust between the interviewer and the interviewee. Furthermore, face-to-face interviews allowed us to explore the implicit elements and shared understanding of a CFA.

Data collection was a four-stage process. First, we used semi-structured questionnaires to collect data from the senior management of the agroprocessor. The foundational questions posed to the senior management of the agroprocessor related to (1) the ways in which the firm procures soybeans; (2) the ways in which the firm procures soybean differ; and (3) the reasons for the firm to source through multiple CFAs. Furthermore, we asked the senior management questions related to the ambiguity and complexity of transactions, as well as the firm's strategic behaviour, in line with our conceptual framework, and also obtained information on the production contracts. Second, we triangulated the information obtained from the senior management of the firm by interviewing 12 farmers, leaders of formal and informal producer organizations and an NGO participating in the different CFAs. This way, we sought to reconcile the contract as a legal instrument with the CFA as a lived experience. Thirdly, we coded the interview data manually and developed conceptual categories. Lastly, we presented our preliminary findings to the senior management team of the agroprocessor for comments and additional inputs.

4. Results and discussion

Figure 1 depicts the supply chain of the focal agroprocessor, which is located at the centre of the diagram. Its procurement arrangements are shown, with the number of farmers and average volume from each arrangement shown in percentage.

The agroprocessor obtains raw soybeans in five ways, which differ primarily in terms of actors involved, the contract and embedded services, as detailed in Section 4.1. In CFA1, the agroprocessor has contracts with farmers who participate in the extension programme of a non-governmental organization (NGO). CFA2 involves contracts with farmers who are organized under an informal producer organization (IPO), while farmers in CFA3 are members of a formal producer organization (FPO) and CFA4 comprises contracts with individual medium scale and large-scale farmers. Finally, the agroprocessor obtains the bulk of its raw soybeans (60%) from the spot market which comprises independent traders and the agricultural commodity exchange.

After delivery, raw soybeans are tested for moisture, oil and protein content, cleaned and fed into a solvent extraction plant which extracts oil from the beans and leaves a residue called soybean meal. The oil extract constitutes about 20% of the soybean weight and is used to produce edible oils such as cooking oil and margarine. Soybean meal is the main ingredient used in animal feed due to its high protein content. The focal agroprocessor exports 80% of the soybean meal to various regional markets, while the remainder is either sold on the domestic market or further processed into textured soya protein products (tsp), such as tofu, soy milk and soy flour, for local human consumption.

The main export destinations for soybean meal are Kenya, Zimbabwe, Zambia and other countries in the Southern African Development Community (SADC) region. Soybean meal destined for these export markets must be GMO-free and meet stringent conditions with regards to protein quality. In particular, the correct

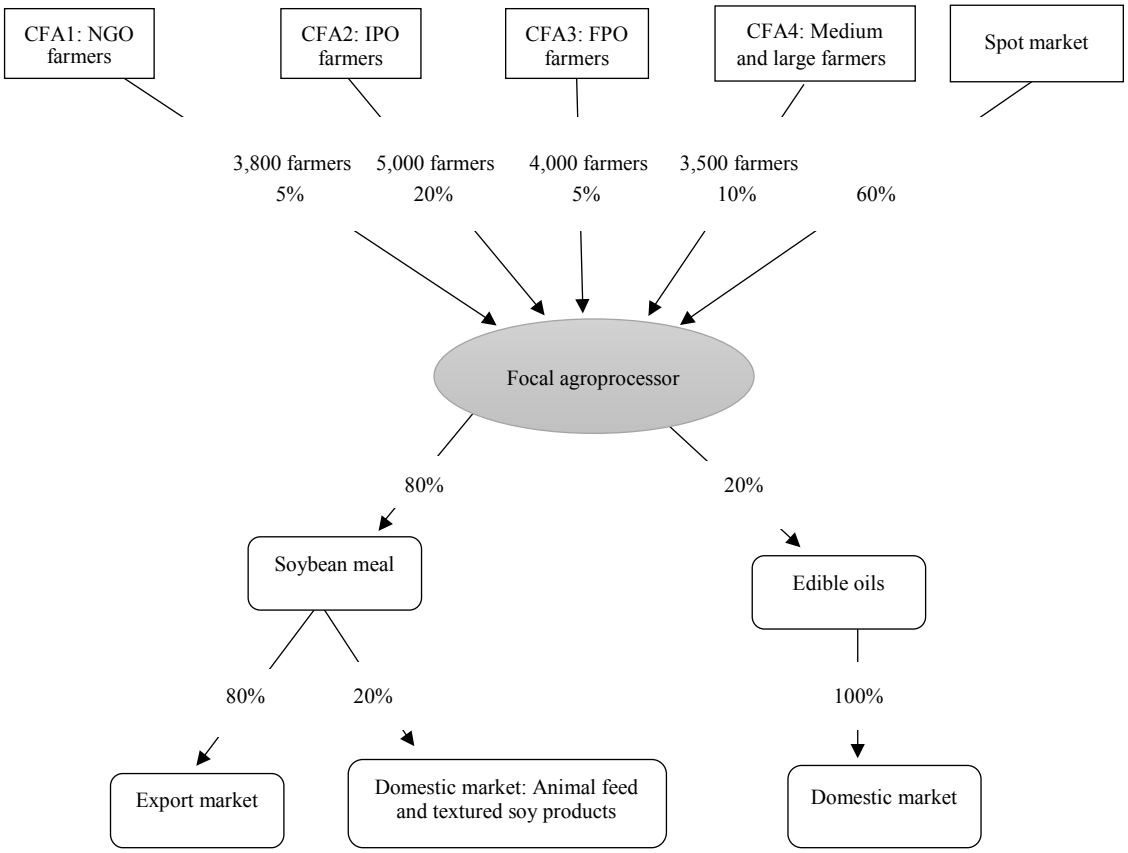

Figure 1. Diagram of the supply chain of the focal agroprocessor.

moisture content, heating time and temperature must be achieved during processing to eliminate anti-nutritive factors (ANFs) in raw soybeans, which results in improved performance when fed to animals.

4.1 Plurality of contract farming agreements

This section describes the different procurement arrangements and examines the reasons for their formation and coexistence, based on interviews with executives of the focal agroprocessor.

■ *Characteristics of different contract farming agreements*

Since its establishment in the early 2000's, the focal agroprocessor traditionally procured its raw soybeans from independent traders. However, the independent traders did not always meet the company's quality and quantity expectations, which made it difficult to guarantee minimum supply to its customers. In 2014, the agroprocessor successfully applied for a grant from the Malawi Innovation Challenge Fund (MICF), a donor-funded mechanism for private sector development. The firm used the grant to acquire a new processing plant. The condition of the grant was that the firm would adopt an inclusive business model under which it would source from smallholder farmers. The firm accepted the grant because it expected that it could improve the supply of raw materials in terms of both quantity and quality by adopting contract farming.

In starting contract farming, the focal agroprocessor was uncertain about which contract farming model would work best. Therefore, it was decided to adopt plural forms on an experimental basis. The management expected that over time, they would discover the CFA that works best for the firm and farmers, and then adopt it. Thus, as shown in the literature (e.g. Zylbersztajn and Nogueira, 2002), the concurrent use of more

than one form of governance was seen by managers as transitional, with one governance structure expected to prevail as experience, learning and adjustments occur.

The management of the focal agroprocessor decided to mainly work with small farmers that are members of a producer organization, for several reasons. First, farmers that are already organized into groups were perceived by the agroprocessor to be ready to participate in contract farming. Group membership, in this perspective, signals entrepreneurial ability to grow and to market cash crops in a systematic way. Second, organized farmers afforded the agroprocessor the possibility to contract a group rather than individual farmers, thus reducing contracting costs. Third, the umbrella organizations of farmer groups traditionally provide core services to their membership, such as agricultural extension, initial provision of the capital required to finance inputs or investments, or de facto contract monitoring and enforcement. Hence, by working with farmers that are already organized, the agroprocessor could leverage existing capacities in the umbrella organizations thus reducing the firm's contract farming set-up and management costs.

The contract is typically entered between the producer organization and the firm. The producer organization, in turn, subcontracts willing members to grow soybeans for the contract. Farmers who sign up are required to deliver their produce to the cooperative, which assumes ownership, sells to the agroprocessor and receives payment. The producer organization only pays the farmers when it has received payment from the agroprocessor. Moreover, due to working capital constraints in a buyer's market, the producer organization is a price-taker, and thereby provides many complementary services to the firm, including extension services and aggregation, out of membership fees rather than the contract.

CFA1 involves farmers who participate in an NGO programme. The NGO promotes contract farming because, as a private-sector commercial venture, it is considered to be financially sustainable. The NGO organizes farmers, promotes the cultivation of high value crops, links organized farmers to buyers and mediates in contract negotiation and dispute resolution. The NGO also provides seeds, trains farmers on farm business management, provides technical assistance, monitors and enforces contracts, constructs warehouses, weighs, grades and bulks farmers' produce. In the NGO programme, the smallest operational unit of farmer organization is a club, which is made up of 15-25 members. In each club, there are crop clubs (e.g. Soya Club) bringing together farmers that grow one crop. This is efficient for crop-specific training, technical assistance and dissemination of information. 10-15 club chairpersons make up a Cluster. The chairpersons of 10 clusters combine to form an association. A seasonal written contract is signed between the agroprocessor and associations at the beginning of each season. The NGO signs as a witness to the agreement. Under the contract, the agroprocessor provides the associations with approved seed, fertilizers and inoculants. The contract specifies a minimum price. From the perspective of the agroprocessor, the farmers who participate in the NGO programme are attractive because they have received soya-specific training, and the NGO subsidizes the CFA by providing technical support, bulking services and monitoring compliance. Furthermore, the NGO is trusted by farmers and acts as a neutral arbiter in case of disputes between the contracting parties.

CFA2 involves farmers that are organized under the largest smallholder membership federation in Malawi. It is founded on the principles of collective action and has a membership of 164'000 small farmers. The organization has deliberately avoided turning its associations into cooperatives. The smallest unit of the membership structure is a farmer's club, made up of 10-15 self-selected individual farmers. 10 farmer's clubs make up an action groups (AG) that is the key entry point in the extension network for dissemination of information to members, and for the bulking of member crops. Ten AGs combine to form an association. In total, the organization has 43 associations which have simple written contracts with the agroprocessor. The umbrella organization links its members (associations) to buyers, transports produce, supervises farmers, provides training and technical assistance and runs a seed programme. Under the seed programme, 1 kg of certified seed is provided to the farmer, who must repay it with 2.5 kg of produce. The organization uses 0.5 kg of the repayment to cover administration costs, while 2 kg is invested in the seedbank for the next season. This way, farmers do not perpetually depend on buyers for (expensive) seeds. Therefore, unlike other CFAs, the CFA2 contract merely includes provision of inoculants and guarantees a market. The contract guarantees

a minimum price and specifies the cost of inoculants. According to managers of the firm, the CFA2 contract provides minimal financial investment by the agroprocessor because associations are informal organizations, thus do not provide the firm with strong legal protection in case of litigation. From the agroprocessor's perspective, the advantage of CFA2 is that the umbrella organization has a seed programme, provides technical assistance and transport, and monitors the contract, thus minimizing the firm's contract management costs. Furthermore, farmers' clubs are self-selecting, based on kinship, geographical proximity and strong social ties. As such, the agroprocessor expects that peer pressure among farmers can prevent side-marketing, facilitate faster knowledge transfer, reduce loan default and overall, lower transaction costs.

Under CFA3, the agroprocessor has contracts with formal producer organizations (FPOs) or cooperatives that are members of a farmers' organization. The primary role of the farmers' organization is policy advocacy on behalf of farmers. An indefinite contract is signed between the agroprocessor and different cooperatives. The cooperatives have also engaged a specialist agency for warehouse management services, including aggregation of farmers' produce, cleaning, grading, re-bagging and storage of soybeans. The agroprocessor provides training and technical assistance, certified seed and inoculant. The contract also guarantees a minimum price and specifies the cost of inputs provided. For the agroprocessor, contracting with cooperatives benefits the agroprocessor because as a registered legal entity, the firm has legal recourse in the event of contract default. Furthermore, as cooperatives already provide complementary services to their members, including agricultural extension, technical assistance, aggregation, transport and contract monitoring and enforcement, the firm avoids the cost of managing the contract.

In CFA4, the agroprocessor has direct contracts with medium and large-scale farmers. In this arrangement, the agroprocessor identifies and selects suitable farmers, contracts them individually, and offers a long-term production-management contract with inputs, technical assistance and transport provided. As these farmers have 5 hectares or more, the management of the firm believed that they could produce larger quantities through use of better farming technology. Furthermore, as the farmers received direct technical assistance and monitoring from the firm's extension agents, they were better placed to meet the firm's quality requirements.

■ *Ambiguity in the measurement of attributes of soybean transactions*

The management of the agroprocessor identified four causes of ambiguity about the best governance model to coordinate transactions. First, the agroprocessor signed forward contracts with international customers. The forward contracts represent a commitment by the agroprocessor to supply a specific quantity and quality of soybeans in a given period at a given price. According to management, failure to deliver as per agreement can lead to legal action against the firm, loss of market share and bad reputation.

The second factor generating ambiguity is the MICF grant condition requiring the firm to contract small farmers. As small farmers have limited land available for soybean production (0.4-0.8 ha), complying with the grant condition implies that the focal agroprocessor contracts many producers (more than 16,000) in order to obtain enough raw soybean at predetermined price, utilize its installed capacity and meet increasing market demand. With a large and diverse base of producers to plan almost half of its operations, the focal agroprocessor management expected that the firm would face a lower risk of raw soybean shortages and a reduced risk of failing to meet commitments to customers. However, contracted farmers often side-sell to independent traders who buy at low price at farmgate, hoard the soybeans and sell to the agroprocessor during the off-season when the price is high. This situation creates ambiguity for the agroprocessor, as it must meet its commitment to MICF. Therefore, to mitigate the risk of non-compliance with an existing commitment to the donor, the agroprocessor concurrently procures from multiple CFAs and independent traders.

A third reason highlighted by the management of the focal agroprocessor is that each CFA has certain benefits and risks. For instance, CFA1 is attractive to the agroprocessor because the NGO partner is unlikely to behave opportunistically as it has no financial conflict of interest in the contractual relationship between the agroprocessor and farmers. Thus, the NGO is trusted by both contracting parties and acts as a neutral

third party in promoting transparency in contract negotiation, grading and settling disputes. In the Malawi context, farmers' trust in the buyers has been historically low, thus making NGO participation important to the agroprocessor. Furthermore, the NGO provides complementary services such as extension services, bulking, contract monitoring and enforcement, thus reducing the agroprocessor's contracting costs. According to the firm's management, NGO-supported farmers also differ from those in other CFAs in terms of farm size (smaller), crop specialization (higher) and non-farm income (lower), which merits a separate governance structure. However, there are certain disadvantages to working with NGO farmers. First, the NGO interventions are welfare and project-oriented. Thus, there is a risk that farmers may quit the CFA when NGO support reduces or dries up. Second, the agroprocessor and the NGO have different organizational cultures, missions, and perspectives about the definition of value. The NGO is oriented towards the creation social value by removing barriers that hinder social inclusion and mitigating the negative consequences of economic activity, whereas the agroprocessor is oriented towards the creation of economic value. Resultantly, the NGO is hostile or distrustful of the agroprocessor or do not have the business acumen to make economic ventures such as CFAs work. These problems are exacerbated by the criteria used by the NGO to select farmers who participate in CF. The NGO typically enrols resource-constrained farmers, who may not be the most efficient and/or committed farmers. The risks and costs associated with contracting with NGO farmers can be mitigated by contracting IPO and FPO farmers or direct contracting with medium and large-scale producers, but each of these alternatives also implies its own unique advantages and disadvantages which could not be accurately quantified by management. Due to this difficulty, management decided to concurrently source from multiple CFAs.

The fourth reason for ambiguity of soybean transactions relates to adapting to the institutional environment. Management explained that contract farming in Malawi takes place in an institutional environment characterized by lack of information, poor access to credit and subsidies, low trust among trading partners, weak protection of property rights, as well poor transport and telecommunication infrastructure, especially in rural areas. Furthermore, the adjudication over contracts is centralized and the costs of legal recourse, in terms of time and money, tend to be relatively higher than the investment in contract farming, thereby increasing the likelihood of contract breach. This institutional environment creates significant uncertainty and risk for the agroprocessor, which seeks to ensure business continuity by adopting plural forms.

The consequence of the ambiguity of transactions described above is that while the agroprocessor had initially set up plural governance as a transitional mechanism, at the time of the interview the management considered the different CFAs to be stable and an essential strategy for coordinating transactions by firm. Management observed that the different CFAs are complementary, as reported in prior literature (e.g. Bradach and Eccles, 1989; Brousseau and Codron, 1997; Menard, 2013; Parmigiani, 2007).

■ *Complexity of soybean transactions and the difficulty in assessing their costs*

An analysis of soybean transactions reveals that the focal agroprocessor's managers have difficulty determining the transaction costs associated with each CFA in a precise way, because the outcomes of soybeans transactions depend on many factors. First, there are at least eight soybean varieties grown in Malawi, each involving a trade-off between yield and oil content. Smallholder farmers prefer varieties that maximize yields, while the firm wants to maximize oil content. This situation creates a moral hazard problem as the price paid to the farmer does not differ by variety. A further complication is farmers' use of recycled seeds, which compromises the genetic purity of the soybeans and affects quality. Second, the quality of the soybeans also depends on weather, soils, cultivation practices and the quality of technical assistance provided to farmers. These variables are related in a way that cannot be fully understood by the firm's management. Third, the outcome of soybean transactions depends on the decisions of many agents, such as input suppliers, farmers, extension agents and intermediary organizations involved. The influence of each of these agents in the outcome cannot be evaluated precisely, since the firm does not monitor all of them. This complexity makes it difficult for management to establish a preference order between CFAs, thus plural forms are continued.

■ *Strategic behavior of the focal agroprocessor*

Interviews with the management of the focal agroprocessor show strategic motivation for simultaneously sourcing from multiple CFAs. The focal agroprocessor's strategic intent is evident in the way it chooses the small farmers that it offers contracts: they must belong to an NGO, association or cooperative. From the agroprocessor's perspective, the suppliers under each intermediary organization differ in terms of farm assets, risk preference, propensity for opportunism, commitment, entrepreneurial ability, farm size and crop specialization. As such, the farmers have different preferences over the different contracts that the agroprocessor offers. For instance, CFA1 farmers are offered a seasonal marketing contract, while CFA4 farmers have a long-term production-management contract. Plural governance arises out of the agroprocessor's need to match governance structures with perceived characteristics of farmers, much less than the attributes of the transaction. Management believes that a good fit between farmer characteristics and governance structure is essential for stable contract farming.

Another strategic motivation for the adoption of plural governance relates to industry competition. In Malawi, competition in the soybean industry has intensified in recent years and takes place at three levels. At the level of the smallholder, there is competition for alternative use of land. After a bad season (e.g. due to poor prices), smallholders often want to switch from soybean to tobacco production. At the buyer level, there are 14 buyers on the market, including independent traders and the agricultural commodity exchanges, that compete for suppliers of raw soybeans. Lastly, at the processing and marketing levels, the focal agroprocessor competes with 20 other firms. By obtaining supplies through multiple CFAs, the focal processor can compete and exert bargaining power at all levels.

To gain a competitive advantage at the smallholder level, for example, the agroprocessor offers a mix of contracts to different farmers, thus potentially offsetting the impact of farmer attrition. For instance, if farmers with seasonal contracts (e.g. CFA2) reduce production or drop out, the firm can increase production from CFA4 farmers who have long-term contracts and more land. Furthermore, the agroprocessor's managers indicated that they use knowledge and experience gained in one CFA to improve the performance of other CFAs, and also to gain bargaining advantage in negotiations with farmers and their intermediary organizations. This strategy aligns with the idea that using plural forms of governance enables gains from synergies (Menard, 2013; Parmigiani, 2007). The fact that the firm sources from multiple CFAs also gives it bargaining power in the spot market because the CFAs act as a price-revealing mechanism, thereby reducing information asymmetry. For processing and marketing, multiple sourcing enables the firm to obtain raw materials at a low cost for efficient plant utilization while reducing dependence on any single source. This way, the firm is able to guarantee minimum supply to its customers, thus gaining a competitive advantage over competitors who rely on a single source.

In the case study, the fact that the management of the agroprocessor set up and considered the multiple CFAs as a temporary measure shows that strategic behaviour was not the primary motivation for plural governance. Rather, strategic behaviour arose from experiential learning about the complementarity of plural forms.

5. Conclusions

This paper identified the different CFAs used by an agroprocessor and analyzed the rationales for the existence plural forms of governance in transactions between the firm and soybean farmers. The agroprocessor simultaneously sources from four different CFAs and in the spot market.

The adoption of plural forms by the focal agroprocessor is consistent with the theoretical model proposed by Menard (2013), in which ambiguity, complexity and strategic behavior determine the way the firm coordinates transactions with farmers. We find that ambiguity in the measurement of attributes of soybean transactions is the primary motivation for the adoption of plural forms, while strategic behavior emerges

later as the reason for their persistence. While complexity is present in the transactions between the firm and farmers, our conclusion is that it is not sufficient reason for concurrent sourcing from multiple CFAs.

Our main finding is that reasons for the adoption of plural forms differ from the explanation for their persistence. In the present study, the main reason plural forms were initially adopted is that the donor organization which funded the acquisition of the firm's new processing plant required that the firm source from small farmers. Before the donor funding, the firm was obtaining all its raw soybeans from the spot market. However, at the time of signing the contract with the donor, the firm did not know which types of small farmers would perform best – those organized in formal or informal producer organizations, those participating in an NGO programme or independent farmers. It was decided that the firm needed to know if it could rely on small farmers to supply all its requirements before abandoning the spot market. Thus, plural forms were initially adopted in order to comply with donor requirements and also as a transitional experiment to determine the most efficient governance structure. However, as the plural forms are implemented, they became part of a complex production network where individual contributions to transaction outcomes could not be assessed precisely. Furthermore, it became clear that each CFA had its own unique benefits and costs, and that taken together, the CFAs complemented each other. Moreover, as long as the CFAs coexisted, the firm could better control producer prices and meet its commitments to the donor and customers. Thus, ambiguity over the most efficient structure to govern the transactions explains the adoption of plural governance, but strategic motivations provide the reason why they persist.

Plural forms allow the agroprocessor to plan, secure and control the flow of raw materials for optimal utilization of its installed capacity. Most of the agroprocessor's transactions occur in spot markets. Plural forms help the firm to reduce information asymmetry in the spot market. The firm also gains bargaining power in its transactions with different CFAs. Other advantages of sourcing concurrently from different CFAs include flexibility gains to meet market demand during lean periods and cross learning effects.

Our study makes several contributions to the literature. First, we shed light on the rationale for concurrent buying within a single company in the same institutional environment for the same commodity. Thus, we go beyond the existing literature on plural forms in agri-food chains, which has essentially focused on the rationales for the concurrent use of spot market, hybrid forms and vertical integration. In fact, the analytical model used in the existing literature ignores the diversity of contractual arrangements within each form of governance, and the rationale for their existence and persistence. Our study focuses on the micro-functioning of hybrid forms within a large agroprocessor and shows that different CFAs exist because they provide different benefits which are important to the survival of the firm.

Second, our study disentangles the motivation for the formation of plural forms from the motivation for their preservation, thus unites hitherto opposing schools of thought on the stability of plural forms. In the literature, two schools of thought on the stability of plural forms exist. Some scholars argue that plural governance represents a transitional situation (e.g. Williamson, 1991; Zylbersztajn and Nogueira, 2002), while others view plural forms as stable and an integral part of the firm's strategy for coordinating transactions (Bradach and Eccles, 1989; Brousseau and Codron, 1997; Menard, 2013; Parmigiani, 2007). We contribute to this debate by showing that managers are initially uncertain about the potential benefits and costs of alternative suppliers and therefore adopt plural forms as a temporary measure towards finding the most efficient governance structure. However, as managers gain experience about the advantages of plural forms, they adopt them as part of the firm's long-term competitive strategy.

Our third contribution was to test the conceptual framework proposed by Menard (2013), which has not been used much (except in Brazil). The study provides empirical evidence of plural forms of governance in the soybean industry in Malawi, as well as the rationales for the adoption of this strategy by the focal agroprocessor, which contributes to the ongoing theoretical discussion on the topic.

From a policy perspective, our findings imply that an understanding of agribusiness firms' incentives and disincentives for contracting with different CFAs is important in designing policies and programmes for smallholder inclusion in modern value chains. Government and/or donor policies with noble social or economic objectives may, by removing the agribusiness firm's control over the contract, act to discourage contracting with smallholders. For example, a policy to prevent exploitative contractual terms by standardizing production contracts may eliminate the firm's advantages of concurrently sourcing from multiple CFAs involving smallholders, thus creating an incentive for the firm to contract large farmers who provide economies of scale. Hence, policy makers must balance the benefits of a particular contract farming policy against the costs of smallholder exclusion.

Our study has limitations related to a single case study in the soybean industry in Malawi. Therefore, further research involving more observations in different contexts and a variety of agri-food chains are needed to better understand the rationales for adopting plural forms. Furthermore, prior studies have found that younger companies are likely to adopt plural forms (Higashi *et al.*, 2017). Thus, our findings may only be relevant for newly established agribusiness firms that are adopting contract farming for the first time. Nonetheless, our findings corroborate the need for an extended TCE perspective taking into consideration ambiguity, complexity and strategic behavior to help explain the existence plural forms in agrifood chains, as suggested by Menard (2013).

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