

Contract farming in developing countries: an overview¹

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Abstract

This paper presents a review of the literature on contract farming (CF), focussing on recent empirical research on the economic impact of CF. The paper starts with an explanation of the phenomenon of CF, providing definitions, typologies, models and objectives. Using a Transaction Costs Economics framework, the paper explains for which products and market CF seems most suitable. The empirical literature on CF is assessed by answering three questions: Why do smallholders engage in CF? Are smallholders included in or excluded from CF arrangements? What impact does CF have on smallholder income and rural development? Finally, the paper identifies the conditions under which smallholders are most likely to benefit from CF schemes.

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1 Introduction

Producing and selling on a contractual basis is a common arrangement in agriculture all around the world. Contract farming (CF) has existed for a long time, particularly for perishable agricultural products delivered to the processing industry, such milk for the dairy industry or fruits and vegetables for making preserves.² At the end of the 20th century, CF has become more important in the agricultural and food industries of the developed and developing countries. Spurred by changes in (international) competition, consumer demands, technology, and governmental policies, agricultural systems are increasingly organized into tightly aligned chains and networks, where the coordination among production, processing and distribution activities is closely managed. Contracting between producers on the one hand and processing or marketing agribusinesses on the other hand is one of the methods to strengthen vertical coordination³ in the agrifood chain.

The trend towards more contract farming, and the reasons behind it, have been extensively described for the agrifood industry in developed countries (e.g. Martinez and Reed, 1996; Royer and Rogers, 1998). Developing countries are impacted by the same trends in the agrifood system, and also experience an increase in CF. However, for developing countries there are a number of developments that may lead to an even more rapid expansion of CF. One of these developments is the rise of supermarkets in food retailing. Over the last two decades, the number of supermarkets has grown rapidly in the urban areas of developing countries, particularly in Asia and Latin America (Reardon and Berdegue, 2002). Supermarkets have procurement practices that favour centralized purchasing, specialized and dedicated wholesalers, preferred supplier systems, and private quality standards (Shepherd, 2005). These characteristics of the supermarket procurement systems require more vertical coordination among production, wholesale and retails, thus favouring the introduction of CF. Another development relevant for CF in developing countries is the reduction of the role of the state in providing marketing, input and technical services. As provision of inputs and services by independent firms is often weak, CF can solve the problem of farmer access to inputs (Key and Runsten, 1999). A third development refers to the ambition of donors, development NGOs and governments of developing countries to strengthen smallholder access to markets. These agencies consider CF as one of the main instruments to link small-scale farmers to domestic and even foreign markets and thereby to reduce poverty (IFAD, 2003; Dansson, 2004; World Bank, 2007).

As CF has become more important for the agrifood industry of developing countries, there is a demand for better insight in the advantages and disadvantages of CF for farmers and contractors, as well as in the conditions under which CF works both efficient and fair. The purpose of this paper is to review the empirical literature on CF in developing countries, focussing on the effects for smallholder farmers.

² Little and Watts (1994) provide a historical overview of contract farming in the USA, in Latin America and particularly in Sub-Saharan Africa. The authors discuss economic, social and political aspects of CF.

³ Many authors use the term vertical integration when describing the alignment between activities at different stages of the supply chain, or between the activities of the sellers and the buyers. However, this term may lead to confusion because in economics vertical integration is reserved for the situation where two formerly independent assets have been brought under unified ownership. To prevent misunderstanding, we will use the term vertical coordination.

The paper is structured as follows. Section 2 answers the question ‘what is contract farming?’ It provides an overview of the different types, models, objectives and specifications that can be found in CF around the world. Section 3 discusses the products and markets for which CF seems most suitable. In Section 4 we zoom in on the impact of CF for small farmers. Section 5 discusses the conditions that make CF work, such as enabling state policies and NGO support. Section 6 presents several concluding remarks. Finally, Appendix 1 presents a list of the advantages and disadvantages of CF, for farmers and/or for contractors, as they have been found in the literature. One issue that is not covered in this paper, and will be dealt with in a separate paper, is the role of Producer Organisations in CF.

2 Different types, models, objectives, and specifications

CF has been defined as an agreement between one or more farmer(s) and a contractor for the production and supply of agricultural products under forward agreements, frequently at predetermined prices (Eaton and Shepherd, 2001). The US Department of Agriculture defines contract farming as “the growing and marketing of farm products under such circumstances that selective terms of the market—quantity, grade, size, inspection, timing, or pricing are specified to both the grower and the processor or shipper before production is undertaken.”⁴ The contractor can be a processing firm or a trading/marketing firm; it can be a private or a public entity. The agreement often includes the provision of production support by the contractor, such as inputs and technical assistance. The basis of a CF arrangement is a commitment on the part of the farmer to provide a specific commodity in quantities and at quality standards determined by the contractor and a commitment on the part of the contractor to support the farmer’s production and to purchase the commodity.

The initiative to establish a CF scheme usually comes from the contractor, seeking to improve the supply of homogeneous (high) quality products and to increase capacity utilisation of specific assets (in the case of processing). Contract farming may also be driven by state concerns to promote critical commodity chains (for example in China), or by input suppliers who wish to expand input sales (examples can be found in the feed-to-meat chains of developed countries).

In most of the literature, the terms ‘contract farming’ and ‘outgrower scheme’ are often used interchangeably. However, Glover and Kusterer (1990) make a distinction between CF for private contractor arrangements and outgrower schemes for those involving public enterprises and parastatals. In both types of schemes farmers contract to grow crops or raise animals for a contractor who takes care of the processing and/or marketing of the agricultural product. Eaton and Shepherd (2001: 48) suggest that outgrower schemes were typically used in Africa.

All of the literature on contract farming emphasizes the diversity of contractual arrangements between farmers and contractors. This diversity is a result of the technical requirements of production and the associated production and transaction costs (Simmons et al., 2005). Still, to support comparison and evaluation, several typologies of CF models and contracts have been made. In this section we discuss the different CF models, the typologies of contracts, the distinctions between formal and informal contracts, and the various specifications that can be found in farming contracts.

Contract farming models

Eaton and Shepherd (2001), in their FAO manual for CF, distinguish between five models. These models differ in the type of contractor, the type of product, the intensity of vertical coordination between farmer and contractor, and the number of key stakeholders involved.

The centralized model can be considered as the classical CF model where a processor or packer buys produce from a large number of (small) farmers. In this model there is strict vertical coordination, which means that quality is tightly controlled and quantity is determined at the beginning of the growing season. Typically, products traded under this model require a

⁴ The USDA definition can be found at: <http://www.usda.gov/oce/smallfarm/usdaterns.pdf>

high degree of processing, such as sugar cane, tea, coffee, milk, poultry, and vegetables for the canning industry. Given the importance of economies of scale in processing and thus the large quantities of uniform product required processors often prefer to source from large farmers.

The nucleus estate model is a variation of the centralized model where the contractor not only sources from independent farmers but also has its own production facilities (an estate plantation). The central estate is usually used to guarantee throughput for the processing unit but is sometimes used only for research and breeding purposes. Contractors often used to be state owned farms that have reallocated land to former workers. This model is mainly used for perennial crops, but there are examples of applications of this model in other crops. Eaton and Shepherd (2001: 50) give an example of a dairy nucleus estate in Indonesia where the central estate is primarily used for the rearing of “parent stock”. Vertical coordination in this model varies.

Under the multipartite model, a joint venture between a statutory body and a private company contracts with farmers. Also public or private providers of credit, extension services, and inputs may be part of the arrangement. As part of the liberalization process in the 1980s and 1990s, many governments in developing countries actively invested in contract farming through joint ventures with private companies (Little and Watts, 1994). Multipartite structures are common in China where government departments as well as township committees have set up joint ventures with domestic and foreign investors to establish a processing unit and to enter a CF arrangement with local farmers (Sonntag et al., 2005). When the joint venture has sufficient discretion to control its transactions with the farmers, vertical coordination will be intense. Given the involvement of a public partner in the joint venture, the farmer-contractor relationship may be affected by the political interests of this partner.

The informal model is characterized by individual entrepreneurs or small companies contracting informally with farmers on a seasonal basis, particularly for crops such as fresh fruits and vegetables. Crops usually require only a minimal amount of processing, such as sorting, grading and packaging. Eaton and Shepherd (2001: 54) emphasize that the success of the informal initiative depends on the availability of supporting services, which, in most cases, are likely to be provided by government agencies. For example, while contractors following the centralized model will probably employ their own extension staff, small individual traders usually have to depend on government extension services. An informal contractual relationship provides fewer options for vertical coordination than a more formal relationship.

Under the intermediary model there are at least three parties to the CF arrangement; a processor or major trader formally contracts with a collector (or middlemen) who then informally contracts with a number of farmers. This model, which can be considered as a combination of the centralized and informal models, is common practice throughout Southeast Asia. As there is no direct link between contractor and farmers, this model has several disadvantages for vertical coordination and for providing proper incentives.

A typology of contracts

A classical typology of agricultural contracts has been made by Mighell and Jones (1963), who distinguish between market-specification contracts, production-management contracts,

and resource-providing contracts. These contracts differ in their main objectives, in the transfer of decision-rights (from the farmer to the contractor), and in the transfer of risks.

A market-specification (or marketing) contract is a pre-harvest agreement between producers and contractors on the conditions governing the sale of the crop/animal. Besides time and location of sales, these conditions include the quality of the product, thus affecting a few of the production decisions of the farmer. The contractor reduces the producer's uncertainty of locating a market for the harvest. Under the market-specification contract the farmer maintains most of the decision rights over his farming activities and thus his farm assets. Under this contract the farmer bears most of the risk of his production activities.

The production-management contract gives more control to the contractor than the market-specification contract, as the contractor will inspect production processes and specify input usage. Under this type of contract, producers agree to follow precise production methods and input regimes. Under the production-management contract, the farmer has delegated a substantial part of his decision rights over cultivation and harvesting practices to the contractor; he is willing to do so because the contractor takes on most of the market risks.

Under the resource-providing contract the contractor not only provides a market outlet for the product, but he also provides key inputs. Providing inputs is a way of providing in-kind credit, the cost of which is recovered upon product delivery. How much decision-rights and risk is transferred from the farmer to the contractor depends on the actual contract. Resource-providing contracts can include production-management, thus shifting most decision-rights and risks to the contractor, but can also just focus on providing inputs and an output market and leaving most of the production decisions as well as a substantial part of the risk with the farmer.⁵

Minot (1986) has discussed how the three different types of contracts can solve particular transactional problems (when comparing contract farming with spot market transactions). A market-specification contract can reduce the cost of gathering and exchanging information about demand, quality, timing and price, thus reducing uncertainty and the concomitant market risks. By increasing information exchange, a market-specification contract reduces coordination costs (as compared to spot market trading). Coordination costs are particularly present in the case of (1) perishable products supplied for processing, exports or supermarkets; (2) complex quality products; and (3) new (niche) markets. The resource-providing contract can reduce the costs of obtaining credit, inputs and extension services, including the cost of screening and selecting these services. This type of contract is typically applied in the case of crops for which the quality of the output depends on the type and quality of inputs, as well as in the case where inputs provision reduces production costs for the farmer and thereby purchasing costs for the contractor. Finally, the production-management contract specifies cultivation practices to achieve quality, timing and least-cost production, thus even more economizing on coordination costs. It may also support skills development of the producer, and thereby reduce future transaction costs.

This typology of farming contracts has been developed from the perspective of the farmer (in a developed country context). Therefore, the focus is on the implications of each type for

⁵ While this typology has been used by many authors, it has recently been criticized by Hueth et al. (2007) for being of little value for understanding contemporary agricultural contracts. Their main point of critique is that this distinction does not hold in practice. Most contracts combine elements of marketing (which is the interest of the farmer) and managing or coordinating production (which is the interest of the contractor).

farmer risk and farmer decision-rights. Other typologies take the perspective of the contractor, and compare CF with other institutional arrangements the contractor could choose, such as spot market purchasing or vertical integration (e.g. bringing the farming and processing/marketing activities under unified ownership). Singh (2002: 1621) used the contractor perspective in his typology of contracts, distinguishing between: (a) procurement contracts under which only purchase conditions are specified; (b) partial contracts wherein only some of the inputs are supplied by the contractor and produce is bought at pre-agreed prices; and (c) total contracts under which the contractor supplies and manages all the inputs of the farm and the farmer becomes just a supplier of land and labour. These types more or less coincide with the types distinguished by Mighell and Jones (1963).

Formal or informal contracts

Another way of categorizing contracts is by making a distinction between formal (or written) and informal (or verbal) contracts. In agriculture, contracts are often simple and verbal (Bogetoft and Olesen, 2004). There are good reasons why most contracts are informal and incomplete. Often, the agreement contains variables that cannot easily be verified by the court in case of contract breach. While contract partners know whether the agreement has been honoured or not, for instance whether the right quality has been delivered, it may be difficult for outsiders to assess whether the actual quality is equal to the one described in the contract. An even more mundane explanation for the simplicity of agricultural contracts is that simplicity is efficient. Even if parties are able to write complete contracts, it may be less costly to engage in simple informal contracting and rely on self-enforcement instead of third party protection. Moreover, in many developing countries, notably in Sub-Saharan Africa, there is no tradition of written contract. The traditionally used informal agreements and understandings are still commonly used and respected (Fafchamps, 2004).

Although CF is becoming more important in developing countries, this does not necessarily lead to more formal contracts. Informal contracts are generally more efficient. However, to understand the sustainability of verbal contracts, I will elaborate here on the foundations of the enforcement of informal contracts.

Because informal contracts cannot be enforced by legal authorities (or other third parties) they are called self-enforcing contracts, which means that parties have incentives to honour the contract in all contingencies. These incentives can be both economic and social (Nooteboom, 2002; Klein Woolthuis et al., 2005). Economic incentives to comply with the contract can be derived from the contractual relationship itself or from the larger network of current and potential contracting partners. Relationship-specific incentives to honour the contract result from (mutual) dependency or from the unique partner value. This is a micro-based, or bilateral, incentive. Contracting parties may also have a macro-based (or multilateral) incentive to honour the contract. The so-called reputation mechanism (MacLeod, 2007) means that parties have a calculative interest in cooperation in the current contract because they expect payoffs from future cooperative behaviour. The reputation mechanism means that contract breach not only reduces future trading opportunities with the harmed party, but also forecloses future trade with other parties because the breaching party obtains a reputation of being untrustworthy.

Reputation plays an important role in self-enforcing agricultural contracts. Although contracts in agriculture are usually short-term (annual) agreements, they are often (automatically) renewed unless one party makes an early commitment not to renew or one of the parties does

not comply with the contractual agreements. This self-enforcement mechanism of agricultural contracts has been found both in developed countries (e.g., Allen and Lueck, 2003; Bogetoft and Olesen, 2004) and developing countries (e.g. Key and Runsten, 1999). Warning and Key (2002: 257), writing about contracts in peanut production in Senegal, found that “most contract enforcement actually occurs through a repeated-game approach in which delinquent contracting farmers are denied future participation in the program.”⁶

Also for the social incentives to honour a contract we can distinguish between those that are relationship-specific (or bilateral) and those that are community-specific (or multilateral). On a bilateral level, repeated interaction can lead to empathy, identification, routinization, and affection. Empathy entails that one knows and understands how partners think and feel. It allows one to assess strengths and weaknesses in competence and intentions, to determine limits of trustworthiness under different conditions (Nooteboom, 2002). Identification entails that partners have shared understanding about the goals of the contractual relationship and even develop shared norms to be applied in the relationship (Akerlof and Kranton, 2005). Routinization means that the relationship is taken for granted. On a multilateral level, contracting parties refrain from opportunistic behaviour because the prevailing values, norms, customs, and moral obligations in the community induce behaviour of compliance (Bowles and Gintis, 2002; Keefer and Knack, 2005).⁷

Contract objectives and provisions

Contracts in agriculture have three distinct functions (Hueth et al., 1999; Wolf et al., 2001). First, they serve as a coordination device, allowing individual actors to make decisions (e.g. on resource allocation) that are aligned with decisions of the partner(s). Coordination is meant to ensure that products of the right quantity and quality are produced, and delivered at the right time and place. For instance, contracts commonly specify the volume to be delivered to the contractor in order for the producer to know how much to sow or plant and for the contractor to know how much processing capacity to install. To a limited extent, coordination can be obtained by financial incentives. However, more detailed coordination requires information that cannot be transferred through prices. This information problem is solved through contractual provisions on the obligations of each partner and on clarifying which partner may decide on those actions that are not stipulated in the contract. Second, contracts are used to provide incentives and penalties in order to motivate performance. Without proper incentives to each contract partner, no transaction will take place. Particularly when the contractor demands specific activities from the farmer, for instance in the case of special quality, the contract clarifies what compensation the farmer will obtain for these activities. The contract can include an agreement on the price, but it can also indicate what price determination mechanism will be used to decide on the proper compensation. Third, the contract clarifies the allocation of financial risk. For example, farmers can mitigate the risk of income loss due to poor yield by signing an agreement with a contractor that specifies a portion of compensation independent of realized yields. These three objectives can also be

⁶ Guo et al. (2005), writing about contract farming in China, found that informal contracts resulted in higher contract compliance, compared to written contracts. They attribute this contract performance to the importance of reputation in the social networks in which the transactions take place.

⁷ In this brief discussion of the origins of self-enforcement, we have not used the concept of trust (although it is often mentioned in the literature), as we prefer to consider trust as an outcome (as suggested by Grandori and Soda, 1995) and not as a characteristic of the contractual relationship. Interestingly, both economists and sociologists have argued that repeated exchanges provide information about the cooperative behaviour of exchange partners, thereby allowing for informed choices of whom to trust and not trust (Poppo and Zenger, 2002).

categorized in two groups: coordination and motivation (Milgrom and Roberts, 1992; Bogetoft and Olesen, 2004). Motivation includes both incentives and risk sharing, as the latter is directly related to incentives; risk-averse producers need higher compensation for risky activities.⁸

Contracts are particularly important in situation of quality management, i.e. where improving and/or guaranteeing the product quality is of particular importance to the contractor. One can think of situations of product differentiation, value-added strategies and control of the production process (e.g. in organic) where quality management is particularly important. See section 3 for a further explanation of the conditions under which CF is particularly applied.

The objectives of coordination and motivation may differ in importance. In some cases, coordination is the primary concern, for instance where product perishability requires fine synchronisation of harvesting and processing. This objective favours a production-management contract, and can be found in the high-quality vegetables processing industry. In other cases, the motivational issues are at the forefront, because of potential lock-in effects with resulting underinvestment or in situations of asymmetric information. In these situations a resource-providing contract may be the solution, inducing the farmer to make the investments he would not do otherwise. The particular trade-off between coordination and motivation depends on the context of the CF arrangement, such as legal environment or the availability of (state provided) technical support, on the preferences of the parties involved, and on the distribution of information.

Contracts also differ in the number and kind of specifications. According to Singh (2002), every contract involves at least four specifications: price, quality, quantity and time. However, most contracts include more provisions than just these four. Table 1 lists the specifications that can often be found in CF arrangements.

Table 1. Provisions often found in agricultural contracts

<ul style="list-style-type: none"> ➤ the duration of the contract ➤ the quality standards to be applied ➤ quality control (when, how, who is responsible, who pays) ➤ the quantity that the farmer is obliged or allowed to deliver ➤ the cultivation / raising practices required by the contractor ➤ the timing of delivery ➤ packaging, transport and other delivery conditions ➤ price or price determination mechanism (such as fixed prices, flexible prices based on particular (spot) markets, consignment prices, or split prices) ➤ technical assistance ➤ procedures for paying farmers and reclaiming credit advances ➤ insurance ➤ procedures for dispute resolution

Source: Own compilation based on Eaton and Shepherd (2001); Singh (2002); Kirsten and Sartorius (2002).

⁸ Putting it in different terms, Sykuta and Cook (2001) distinguish three basic objectives in every contractual arrangement: to agree on the allocation of value, the allocation of risks, and the allocation of decision rights. The allocation of value relates to the distribution of gains from the contracted transaction, specifically on the price or the price determination mechanism, and to the delivery conditions under which particular prices are paid. The allocation of risks relates to the uncertainty that contract partners face and the potential financial impact of these uncertainties, and the mechanisms to reduce the risks. In other words, it makes clear who bears the market risk, the production risk, the transport risk, etc. The allocation of decision rights relates to the control one or the other party has over the numerous activities and decisions that together constitute the transaction. For instance, a production-management contract allocates substantial decision rights over production activities to the contractor (and thus away from the farmer).

3 Products and markets for which CF is an appropriate tool

Not all transactions with agricultural products are suitable to be governed by a CF arrangement. As CF involves costs for both producers and contractor, these costs must be outweighed by the benefits, and the positive result of cost and benefit of CF must be larger than with other arrangements for selling/buying the product. The cost of carrying out a transaction between buyer and seller (in our case a farmer and its customer) are commonly called transaction costs. The theoretical framework that is commonly used to explain the choice of arrangement for carrying out the transaction is called Transaction Cost Economics (TCE). In this section we will briefly explain the assumption and prediction of this theory. Important explanatory factors in TCE are the characteristics of the transaction, particularly the investments involved and the uncertainty that buyers and sellers face. Transaction costs generally increase when more vertical coordination between seller and buyer is needed. Thus, studying the vertical coordination requirements provides indications on why particular arrangements will be used. Vertical coordination depends on the type of products and the type of market demands. Minot (2007) has made a useful distinction in the factors that influence the need for vertical coordination and therefore the suitability of the CF arrangement: (1) the type of product; (2) the type of buyer; and (3) the type of destination market.

CF as a tool to reduce transaction costs

The common theoretical explanation for CF is based on Transaction Cost Economics (TCE), a branch of New Institutional Economics (NIE). Central in NIE is the idea that all transactions between economic actors involve costs. These so-called transaction costs relate to finding a market/customer, negotiating, signing a contract, controlling contract compliance, switching costs in case of premature termination of the contract, and all lost opportunities. Transaction costs appear in different forms, almost always caused by uncertainty and/or asymmetric information.

In order to economize on production and transaction costs, transaction parties (bilaterally or unilaterally) choose the most efficient institutional and organizational structure (Williamson, 1985). This so-called governance structure can be defined as the set of rules by which an exchange is administered (Hendrikse, 2003: 243). Governance structures can be classified on a continuum ranging from spot market to hierarchy (or vertical integration). In between these extremes, many so-called hybrid governance structures can be found, combining price (as the dominant governance mechanism in markets) with authority (as the dominant governance mechanism in a hierarchy).⁹ Contracts are a typical hybrid governance structure (Menard, 2004). Shifting along the continuum of governance structures, from spot market through contracts and other hybrids to hierarchy, implies a reduction of transaction costs because through a reduction of incentive intensity, a strengthening of administrative control, a reduction of autonomous adaptation, and a strengthening of coordinated adaptation (Williamson, 1991a). However, governance costs rise with more hierarchical and complex governance structure, thus the optimal organisational structure for a particular transaction depends on the trade-off between transaction costs and governance costs.¹⁰

Transaction costs are determined by human behaviour characteristics and by the attributes of the transaction. Human behaviour is characterized by bounded cognition (it is impossible to

⁹ On the notion of authority (as a hierarchical mechanism) in contracts, see Stinchcombe (1985).

¹⁰ TCE focuses on the transaction costs, leaving governance cost open.

foresee every future contingency) and opportunism (economic actors primarily pursue their individual interests). In the classical form of Transaction Cost Economics (TCE), the main attributes of the transaction that determine the size of transaction costs are asset specificity and uncertainty (Williamson, 1985). Asset specificity refers to investments specifically made for the (bilateral) relationship and whose value is substantially lower outside the relationship. Uncertainty is commonly divided into environmental uncertainty and behavioural uncertainty (Lyons, 1996). Environmental uncertainty relates to a lack of information on the market and the natural environment. Behavioural uncertainty relates to the behaviour of the transaction partner: what will he/she do in unforeseen contingencies?

The key mechanism of TCE is that the particular characteristics of the transaction determine (through its effect on transaction costs) the appropriate governance structure. The working hypothesis of TCE is that economic organization is really an effort to “align transactions, which differ in their attributes, which governance structures, which differ in their costs and competencies, in a discriminating (mainly, transaction cost economizing) way.” (Williamson, 1991b: 79). In other words, TCE explains how economic actors choose, from a set of feasible institutional alternatives, the governance structure that safeguards their transaction at the lowest costs.

How can TCE explain the optimal organisation for carrying out transactions between agricultural producers and their customers? To find the answer we must study the characteristics of the transactions (including the characteristics of the commodity) and of the transaction partners, and find out how they influence the size of transaction costs. Thus, we must look at the extent of uncertainty, bounded rationality, opportunism, and asset specificity present in the transaction. To explain why CF may be a suitable arrangement for a particular transaction, we will indicate how CF may reduce the transaction costs compared to a spot market arrangement.

Uncertainty is directly related to incomplete or asymmetric information on current and future conditions. Buyers and sellers never have all the information they need for optimal negotiation about the terms of the transaction. Often the buyer has better information on the market conditions, while the seller has better information on the quality of the product. The more incomplete the information and the higher the information asymmetry the higher transaction costs as transaction partners will spend resources on solving the information problems. This information problem may be particularly large for smallholder farmers in developing countries, as many public information services that are so common in developed countries are not available. As result, farmers refrain from entering transactions that require additional information. CF can reduce uncertainty for producers because the contractor provides a guaranteed outlet. In addition, by making an agreement on the price before the growing season, the producer already has some certainty about his income. By stipulating in the contract the type of inputs and the cultivation methods to be used, the contractor reduces the uncertainty about the quality of the product that he will receive.

Bounded rationality (sometimes called bounded cognition) is a characteristic of every economic actor. Even when full information on current and future demand, supply, quality, etc. was available, transaction partners would not have the time or capacity to process it all. For smallholder farmers in developing countries, the problem of bounded rationality may be particularly serious, as they often have only very limited formal education. These farmers are not likely to enter into new production activities, even when they could benefit from it. CF cannot reduce the bounded rationality of the producer, but it can mitigate the negative impact

of it. As part of the CF arrangement often the contractor provides technical assistance to the producer. Also through the provisions on cultivation practices, the farmer does not have to evaluate all production options himself.

Opportunistic behaviour means that one (or both) of the transaction partners will not keep its promises.¹¹ CF can reduce cheating on quality by providing proper inputs and technical assistance, and by regularly monitoring cultivation practices. As we have indicated above, CF usually involves repetitive agreements. This repetition, and the accompanying reputation effect, reduce the inclination to behave opportunistic.

Finally, asset specificity is generally considered to be the most important transaction characteristic that would favour CF over a spot market arrangement. When producers, at the time of deciding on the type of product and the investments needed, do not have any guarantee on beneficial market conditions, they are not likely to invest in specific (e.g. high-value high-cost) crops. Any processor that would like to source specific crops from farmers will have to provide some pre-planting guarantee to these farmers that it will purchase the harvest. But also the investments of the processor may be specific for a group of producers. In order to safeguard this investment, the processor will enter into a contract with the producers to have a guaranteed supply of raw material.

So far we have discussed the four factors that influence the size of transaction costs individually. In reality, it is the combination of factors that cause transaction costs to increase. For instance, without opportunistic behaviour asset specificity would not be a problem as all partners would always choose for joint interests instead of individual interests. Also without uncertainty, bounded rationality would not be a large problem. Let us now look in more detail for which products, markets and buyers CF seems most suitable.

Type of product

What type of agricultural product is most likely to be produced within a CF arrangement? When a product is of uniform quality and non-perishable, when quality can easily be observed, and when farmers are familiar with the production methods and market requirements, then transaction costs are low and spot markets would be the most efficient arrangements. These factors explain why many commodities, such as grains, root crops and pulses, are usually sold through market arrangements.

More vertical coordination between seller and buyers is needed for products with the following characteristics (Minot, 2007):

- Economically important quality variation / high-value products. Vertical coordination is more likely when customers (e.g., processors, retailers) are willing to pay a premium for a product, variety or attribute. This premium should be enough to cover the additional cost of producing it and the cost of the CF arrangement. Farm-level investments in human and physical capital, or specialized inputs are needed to raise quality. CF will provide farmers the incentives and the means to make these specific investments.

¹¹ While some authors assume all economic actors are opportunistic, in the sense that they will violate the terms of the agreement as soon as an opportunity for individual benefit occurs, other have stated that opportunistic behaviour does not mean that all actors pursue individual interests all the time, but that any actor will choose its individual interests above joint interests in situation of incomplete information on the relationship between the two.

- High perishability. Perishability increases the need for farmers and buyers to coordinate the timing of harvest and delivery. In addition, the farmer's bargaining power is seriously weakened once the product is harvested. Within some contractually guaranteed outlet, the farmer is not likely to produce such perishable products.
- Technically difficult production. Farmers may not enter into the production of technically difficult crops, because they do not have the technical skills, the inputs and the credit needed. As part of a CF arrangement, buyers can provide technical assistance, specialized inputs and credit. Farmers in developing countries may not have the available cash to purchase inputs at planting time, so the contract allows the buyer to provide them on credit and to recover the cost of the inputs by deducting it from the payment to farmers after harvest.

These factors imply that CF (as a tool to strengthen vertical coordination) is most likely to be used for the following products: high quality fruits and vegetables, organic products, spices, flowers, tea, tobacco, seed crops, and other quality sensitive and perishable commodities. In animal production CF is most common for dairy products and poultry; in dairy because of the high perishability of milk; in poultry because of the technically difficult production requiring specialized inputs and technical assistance.

Type of buyer

The type of buyer that is likely to organize its sourcing through contract farming is directly related to the type of products discussed above. Buyers that are specialized in processing and marketing high value-added crops, highly perishable crops, and products that require specialized inputs and skills, are mostly likely to engage in CF. As setting up a CF arrangement involves large fixed costs, it is generally not worthwhile for traditional wholesalers or small- and medium-sized collectors. Rather, the buyers in CF schemes are more likely to be large-scale processors, exporters, or wholesalers that are preferred suppliers to supermarkets. In addition, buyers with large capital-intensive processing plants have more incentive to contract with farmers because they need a steady and reliable flow of raw material to maintain a high capacity-utilization rate. This is typically the case in the sugar industry where mills generally have contracts with sugarcane or sugar beet producers.

Type of destination market

The third factor influencing the suitability of contracts as the preferred arrangement between sellers and buyers is the type of market. The more quality-sensitive the final market, including more demand for food safety guarantees, the more incentive there is for buyers to increase control over the production process. Typical high demanding markets are foreign (developed country) markets and local supermarkets (particularly the foreign-owned supermarket companies). Thus, vegetables and fruits for the export markets are usually produced under contract, while vegetables and fruits for local consumption are sold through spot market arrangements.

Often, the same product may be sold through spot markets when destined for the local market, and sold under CF arrangement when targeting the foreign market. For instance, in the Shandong Province, China, apples are sold under three different marketing arrangements (Miyata et al., 2007). Vertical integration (i.e. production on farms owned by the packing company) is used for high-quality products to be sold in the export (mainly Japanese) market.

Spot markets are used for selling to the less discriminating local markets. Contracts are used for sourcing the apples that are sold to supermarkets.

The rise of domestic and foreign supermarket chains in many developing and transition countries leads to a growth in contracting arrangements. Miyata et al. (2007: 9) provide an example of the type of contracting arrangement the foreign-owned supermarket company Carrefour in China has with its local suppliers of apples. “Carrefour, the world’s second largest hypermarket/supermarket chain, buys from San Feng (one of the interviewed apple packers) and inspects the apples using its own quality verification system. Quality control focuses on soil, irrigation water, and the use of pesticides and chemical fertilizers. (...) To ensure that the apples meet Carrefour’s standards and to avoid costly rejection of the product at the point of delivery, San Feng closely monitors apple production, sending technicians directly to the farms to manage the timing and types of pesticides that farmers use.”

Conclusion

Contract farming can be considered as transaction cost minimizing arrangement to organize the production and sales process between farmers and their customers. Particularly when vertical coordination between production activities on the one hand and processing/marketing activities on the other hand are required, spot market transactions lead to high transaction costs, due to (behavioural) uncertainty and/or specific investments. In that situation, CF offers an efficient alternative because it can reduce uncertainty and improve incentives for farmers to make specific investments. In addition, it provides an organisational structure for the contractor to supply inputs, technical assistance and credit to the producers.

The need for vertical coordination in the producer/contractor relationship is highest when products are highly perishable, when the production requires specific investments, and when the production involves special skills and inputs. These conditions are most likely to be present when the buyers are large-scale processing plants, exporting companies, and suppliers of modern supermarkets. In general, foreign markets, particularly those in developed countries, demand products to comply with high quality and food safety standards, thus providing an incentive for traders to closely monitor production processes. Contract farming is the arrangement commonly used to be able to guarantee the quality of the products.

4 Contract farming and small-scale farmers: empirical evidence

Small farmers in developing countries face at least three constraints that limit their potential to increase productivity and income. First, they lack information about production methods and market opportunities, particularly for crops that they do not normally grow. Second, even with sufficient information about profitable investments, small farmers often lack the necessary financial reserves. Access to credit is limited by the lack of collateral and/or by the high interest rates demanded. Third, small farmers operating near subsistence are more risk averse than large farmers. They generally prefer to assure themselves a minimum supply of food before expanding commercial production for an uncertain market. As listed above, contract farming has the potential to solve several of these constraints simultaneously.

Several reviews of studies of contract farming suggest that contract farming arrangements do allow small farmers to achieve higher yields, diversify into new crops, and to increase income. However, they also note a number of disadvantages and threats, such as the limits to the inclusivity of contract farming schemes (often restricted to the top tier of smallholder producers), often unequal relations between monopsonistic contractors and farmers, farmers bearing high risks, and contract terms for farmers declining over time in the process of ‘agribusiness normalisation’. What is the evidence that empirical studies on CF report on the benefits and costs of for smallholders? In this section we will present the results of recently conducted empirical studies on CF in developing countries. A comprehensive overview of all the advantages and disadvantages for CF, both farmers and contractors, that have been mentioned in the literature (but not necessarily empirically validated) is provided in the Appendix.

Although the number of empirical studies on CF is still small, the topic is obviously gaining attention. Particularly the International Food Policy Research Institute (IFPRI) has recently published a number of discussion papers on contract farming in India, China and several African countries. Our review of the empirical literature is structured according to the following three questions:

- Why do smallholders engage in CF?
- Are smallholders included in or excluded from CF arrangements?
- What impact does CF have on smallholder income and rural development?

Why do smallholders engage in CF?

The first question to ask is why would smallholders engage in CF? The reasons for farmers to enter into CF, as listed above, are not fundamentally different for large and small farmers. Thus, smallholders may benefit from contracting through (a) reduced risk in production and marketing, and (b) improved access to inputs, technical assistance and credit. These reasons may be more pressing for small farmers compared to large farmers, as the former cannot afford to expose themselves to too much risk. As CF is not a goal in itself, it should lead to higher income and/or more stable income, thereby also contributing to a reduction of poverty.

Masakure and Henson (2005) have explored the motivations behind the decisions of small-scale producers to grow non-traditional vegetables under contract for export. Based on a survey among smallholders in Zimbabwe (in 2001-2002), they found four factors motivating contracting, namely market uncertainty, indirect benefits (e.g. knowledge acquisitions), income benefits, and intangible benefits (e.g. status). Guo et al. (2005), in their study of

contract farming in a number of eastern provinces in China, found that farmers enter CF arrangements to obtain the following advantages: price stability, market access, and technical assistance to improve product quality.

Traditionally, one of the key elements of CF in developing countries is the interlinkage of inputs and output markets (Dorward et al., 1998). Interlinkage contracts provide coordination between farmer and firm, for instance by having the contractor provide the right inputs and/or providing technical assistance. Smallholders often do not have access to credit, technical assistance and/or inputs, as the markets for these products are not well developed and government does not (or no longer) provide these services. Only by entering into interlinkage (or interlocking)¹² contracts with traders or processors small farmers may obtain credit for inputs. However, Dorward et al. found that interlinkage/interlocking may be undertaken by traders to economise on transaction costs, thus making the transaction more efficient, but may also be used as a mechanism for extracting surplus from the farmers. Whether interlinkage/interlocking contracts are efficient and beneficial for smallholder farmers depends on a number of conditions (see Section 5).

CF is often associated with export crops and high-value crops, for good reasons (Simmons, 2002). These non-commodity crops are likely to be more risky than traditional crops. They have higher production costs hence more income is at risk in the event of crop failure. In addition, prices of non-traditional crops are more volatile due to thinly traded markets, yield is more uncertain than with traditional crops and such crops are often more perishable. Hence, to induce farmers to grow this higher risk crops, some kind of protection against production and marketing risks has to be offered to them. Contracting may provide this protection. Saenz-Segura (2006), in his study on contract in the pepper and chayote supply chains in Costa Rica, provides empirical support for this argument. He found that contracts have one or more of the following functions for farmers that consider the production of high value crops: (1) a security device to enable farmers to take up new production activities and to gain access to specialized markets; (2) a provision of incentives to make the investments needed for specialty production; and (3) a provision of information on specialty markets.

Are smallholders included in or excluded from CF arrangements?

Once we have acknowledged that smallholders can benefit from CF, the next empirical question is whether they are actually included in CF arrangements. This is a pressing question, because when smallholders are not included in such schemes, expectations on the positive impact of CF on poverty reduction may not hold.

While smallholders can benefit from CF, because it provides access to markets, inputs, technical assistance and credit, and it reduces on-farm and marketing risk, their inclusion in such arrangements is not obvious. Key and Runsten (1999: 396) found a clear preference of (foreign) processing companies to contract with large-scale growers.¹³ “The main disincentive

¹² Dorward et al. (1998) make a distinction between *interlinkage* and *interlocking* contracts. Interlinkage contracts govern transactions in which the two parties trade in at least two markets (e.g. for inputs, for output, for credit) on the condition that the terms of all such trades are jointly determined. This type of contract is most common in Asia. Interlocking contracts govern transactions in which seasonal inputs are provided on credit with the borrower's expected harvest of the crop in question serves as a collateral substitute to guarantee loan repayment. This tying of loan recovery to activity in the output market is due to the pervasiveness of strategic default, common in Sub-Saharan Africa.

¹³ Still, Key and Runsten (1999) also describe a successful CF arrangement between a Mexican frozen vegetables firm and a number of smallholders.

for firms to contract with smallholders appears to be the transaction costs associated with providing inputs, credit, extension services, and product collection and grading.” Another reason why contractors may favour sourcing from middle to large scale farmers is that it lowers the probability of producer default as the large farmers usually have better skills and more resources available. Also Singh (2002), Guo et al. (2005), and Simmons et al. (2005) found that agribusiness firms prefer to deal with relatively large producers.

However, other studies did not find this bias against small farmers. Miyata et al. (2007), studying contract farming in horticulture in Shandong Province, China, found little evidence that contracting firms prefer to work with larger farmers. In addition, Pomareda (2006), in a study of contract farming in Costa Rica, found no clear preference for middle to large producers against smallholders. In fact, he found that contractors are more interested in a responsible behaviour and in low exposure to risk, than in the size of the holding. In the case of vegetables, contractors even preferred to contract with smallholders as they make use of family labour and usually are more dedicated. Birthal et al. (2005), studying the contractual arrangements adopted by different firms to integrate small producers of milk, broilers and vegetables in supply chains, did not find any structural preference of contractors for large producers. These authors observe that contractors in India often find it more convenient to contract with smallholders and their associations for several reasons: (1) Less effect on overall supply in the event of crop failure of one or few farmers; (2) More flexible production portfolio of smallholders, which would help in quickly responding to consumers’ changing preferences; (3) Smallholders could ensure better quality as they strictly comply with the production practices advised by the firm mainly due to more family labor and lower bargaining power; (4) Low marketable surplus of smallholders increase their dependency on the firm for profit maximization (Birthal et al., 2005: 21).

These argument in favour of contracting with smallholders are similar to the advantages of smallholders over large firms that have been proposed by Key and Runsten (1999). These advantages are particularly in terms of production costs: they have access to ‘cheap’ family labour, and to the extent that the smallholders cultivate the crops themselves, their labour is self-supervised. The more labour intensive the cultivation, the more competitive advantage the small family farm has compared to large farms.

There are also examples of contractors shifting from large to smaller producers. Runsten and Key (1996) found that multinational tomato processors in Mexico first contracted with large growers but then involved the small growers as well because side-selling was a problem with the larger growers while small growers had few alternatives to sell their produce. However, dealing with smallholders requires special attention from the contractor. “It is clear that a great deal of the success depends on the sensitivity of the contractor to the needs of the small producers and on the careful transfer of technology appropriate to their situation.” (Runsten and Key, 1996: 32).

What impact does CF have on smallholder income and rural development?

Knowing that smallholders are included in CF arrangements, although not under all conditions, the next empirical question is what the impact is of this arrangement on smallholder income and rural development. In the late 1980s and early 1990s a number of cross-country reviews of contract farming in Africa have been conducted, which not only assessed the impact of contracting on farmer income, but also paid attention to the impact of CF on non-contracting farmers, on gender relationships and on communal development (e.g.

Glover and Kusterer, 1990; Little and Watts, 1994; Porter and Phillips-Howard, 1997). These earlier studies were mainly based on comparative case study analysis. A more recent publication along these same lines of studying the broader socio-economic impact is Singh (2002), who investigated CF in the Indian Punjab.¹⁴ All of these did find that farmers participating in CF obtained benefits. It gave them more reliable income, generated additional employment, provided new technologies and credit, and improved market access. However, they also found a number of disadvantages for both participants and the rural community. First, contracting can result in winners and losers at the community level where the winners are contractors and their suppliers while the losers are people who do not receive new income but must pay higher prices for food or for farm inputs. This is sometimes called a dual agricultural development. Second, in so far CF shifts farm production to cash crops, it may adversely affect the production of basic food crops. Third, CF may lead to more narrow local farm markets resulting from agricultural resources being diverted to contract farming. This creates problems for non-contract producers who then face thin markets and lower prices.¹⁵ Fourth, CF leads to a dependency relationship between producers and contractors, which made the producers vulnerable to sudden changes in the strategy of the (foreign) contractors and resulted in exploitative behaviour by the contractors. Fifth, CF leads to gender inequalities both in quantity and quality of work for women and children. Sixth, CF leads to overexploitation of natural resources. Finally, changing relative incomes of members of a community may also cause social tensions.

More recently, impact assessments have applied econometric analysis using micro-level data. These studies are based on very extensive survey data. By zooming in on different farm level impacts, broader rural development effects have not been included in the analysis, although often inferences are made about wider economic impact. Miyata et al. (2007) have studied contract farming in Shandong Province, China, using survey data collected from 162 apple and green onion farmers and interviews with four contracting firms in 2005. Using a Heckman selection-correction model to control for possible selection bias, they found that contract farmers earn significantly more than independent farmers after controlling for household labour availability, education, farm size, and other characteristics. In addition, the authors found that the way contracting contributes to farm income varies between commodities: contract apple growers benefit from higher yields (presumably due to technical assistance), while contract green onion growers receive higher prices (presumably due to better quality).

Birthal et al. (2005) found that the gross margins for contract dairy farmers in India were almost double those of independent dairy farmers, largely because contract growers had lower production and marketing costs. They also found that vegetable contract farmers received prices that were eight percent higher than those received by non-contract growers.

Warning and Key (2002) studied contract farming in peanut production in Senegal. NOVASEN, a private company, contracted 32,000 growers and produced approximately 40,000 tons of peanuts annually. The authors found that farmers increase their income substantially by participating in the CF program (compared to non-participating farmers). They attribute this result to the programme's mobilization of local information through its use

¹⁴ These studies take a so-called political economy view of contracting, emphasizing the power relationship between (small) producers and contractors, and the impact the power imbalance has on the distribution of cost and benefits.

¹⁵ Hendrikse (2007) shows that spot market prices decrease when contracts are introduced.

of village intermediaries, permitting the substitution of social collateral for physical collateral and making the program more accessible to the poor

Interestingly, Warning and Key (2002) found that the CF programme did not favour larger or wealthier growers. They also suggest several reasons why small growers benefit as much as large growers. Unlike many CF schemes that require the cultivation of a non-traditional crop with a limited local market, the peanut programme involves the production of a traditional cash crop. This also implies that farmers do not have to make large fixed capital investments to participate in the programme. Another consequence of the farmers' familiarity with peanut cultivation is that uncertainty associated with the contract is low, which means that poorer households are more willing to enter CF than they would with programmes involving less familiar crops. Finally, because peanut cropping is well known, extensive training of growers is not required, which reduces the transaction costs of working with many small growers.

Simmons et al. (2005) investigated the impact of CF in poultry, maize seed, and rice seed in Indonesia. They found that contracts positively affected welfare. The contracts for seed corn and broilers resulted in improved returns to capital and left participants better off. For the seed rice contract, the contract did not increase returns to capital but did confer other benefits such as secure market access. All three contracts – for poultry, maize seed and rice seed – reduced absolute poverty.

Ramaswami et al. (2006) have analysed the gains from CF in the case of poultry production in the state of Andhra Pradesh in India. They found that production under contract is more efficient than non-contract production. Although most of the efficiency surplus is appropriated by the contractor, growers still gain appreciably from contracting in terms of lower risk and higher expected returns. “The key to this puzzle is that poultry processors choose as contract growers those whose skills, experience and access to credit make them relatively poor prospects as independent growers. With contract production, these growers achieve incomes comparable to that of independent growers”. (Ramaswami et al, 2006: 32).¹⁶

Conclusions

Farmers engage in CF because they can obtain higher incomes and higher profits. CF also provides them with access to inputs, credit, and technical assistance. Finally, contract gives them (guaranteed) access to markets. The question of smallholder inclusion cannot be unambiguously answered. There are a number of studies that found exclusion, and there are a number of studies that did not find any bias against smallholders. Most of the latter studies seem to be located in Asia. The income effects of CF on smallholders are mainly positive, particularly in the recent studies of CF in China, India and Indonesia. No major differences between sectors or products have been found.

¹⁶ Although Ramaswami et al. (2006) do not explicitly discuss the issue of small and large farmers, their result indicates that CF is of higher benefit to resource-poor farmers than to resource-rich farmers.

5 What conditions support smallholders to benefit from CF schemes?

What are favourable conditions for smallholders to enter into and benefit from CF? The literature on CF suggests the following conditions that may result in benefits of CF arrangements for smallholders: a sellers' market, supportive state policies, a balanced power relationship, standard crops, collective action in producer organisations, and support from NGOs. Let me briefly discuss the arguments.

Dorward et al. (1998: 257) have identified a number of conditions related to the structure of the market which have to be fulfilled before interlocking contracts (i.e., contracts with a focus on providing credit) can be beneficial for both contractor and (small) farmers:

- There must be strong demand for the crop output (i.e., a sellers' market), providing incentives to engage in CF to those traders who have access to capital. This will normally be associated with traders making investments in some form of specific assets in crop trading, an investment which needs to be serviced by a high turnover. Specific assets may include investments in plants (such as in processing) or in a special relationship (including reputation) with a large retailer or exporting company.
- There must be competition among traders, to prevent farmers being locked into unequal relationships with a particular trader.
- Farmers must face effective repayment incentives, which means that they incur a loss of earnings if they default on a loan. This requires that the crop provides them with better returns than other income earning opportunities. In a situation where traders are competing for farmers' business, there then needs to be either (a) effective exchange of information on farmer reputations, or (b) specific investments by farmers in establishing trust with a particular trader over a period of time.

Governments may play two important roles in ameliorating the negative effects of CF (Eaton and Shepherd, 2001; Simmons, 2002). First, the state may act to regulate the market ensuring that contractors do not abuse their market power. Examples of such role of the state are the enactment of competition policies, the introduction of special contract law, and the provision of low cost arbitration options. Second, the state may facilitate contracting by encouraging agribusiness firms to initiate new contracts and providing support to smallholders to make them suitable for contract selection. Such facilitating activities may include the provision of training (for instance in negotiation), extension services providing information on pros and cons, and research on CF practices and their impact. But also providing more information on markets and prices may greatly support the position of smallholders when entering CF schemes. Finally, direct subsidies to smallholder may be helpful. Glover and Kusterer (1990) report that smallholders with contracts were subsidised in the early years of their participation to reduce yield risks. In South Africa, the Black Economic Empowerment in Agriculture (AgriBEE), with the goal of ensuring black people's improved access to productive resources and full participation in the agricultural sector, supports the establishment of contract between black smallholders and contractors (Sautier et al., 2006).

Another condition relates to power distribution between producers and contractor. Given the large differences in resource endowments between smallholders and contractors, CF arrangement tend to be characterized by an unbalanced power relationship. This may easily lead to exploitation of the powerless by the powerful (Little and Watts, 1994). Glover (1987), Porter and Phillips-Howard (1997), and Warning and Key (2002) provide a number of recommendations for preventing skewed power relations. First, having an alternative market

option is perhaps the key condition. Farmers who maintain alternative production opportunities and income, in addition to their contracted obligations, are in a much stronger bargaining position than farmers who have devoted their entire land to the contract crop. Second, keeping asset specificity low prevents farmers from becoming too dependent on the contractor. When growers can use the same assets for producing other crops, they can easily redirect their assets away from the contracting scheme should they find the contract terms unsatisfactory. Third, experience with CF, particularly when the contractors are of foreign origin, helps to improve the bargaining position of the farmers. Fourth, farmers in control of land and irrigation water have a stronger bargaining position than farmers lacking control over these resources. Fifth, as women do most of the production work (at least in Africa) contracts can be made more sustainable if they are signed with, and payments are made to, women. Finally, when farmers have several options for obtaining inputs and credit greatly reduces the relative power of the contractor.

Related to the above mentioned issue of asset specificity is the issue of innovation. Glover (1987) argues that smallholders are most likely to benefit from CF in crops whose production technology is not undergoing rapid changes. Small farmers will find it more difficult than larger farmers to adopt innovations because of inferior access to information or inputs, greater risk aversion or lower savings capacity. However, this leads to a Catch-22, as CF could be an effective means to transfer technology to smallholders. As Glover (1987: 446) has emphasised: “To exclude small farmers from CF involving technologically dynamic crops is to exclude them from one of their few opportunities for exposure to new techniques. Furthermore, CF may be able to overcome some of the impediments to rapid adoption by smallholders (e.g., lack of access to credit, information or inputs).” This dilemma is also present when strict food safety and quality standards are introduced. CF can help smallholders, through provisions of technical assistance, to comply with the (private) food safety standards and regulations. However, production according to these strict requirements requires substantial (human capital) investments, which are highly relationship-specific when there is only one contractor. Outside support, such as from (foreign) NGOs or governmental agencies, may be needed to make CF for high quality products a viable option for smallholders.

Several studies claim that farm groups, such as formal or informal producer organisations, may support the efficiency and equity of contract farming (Glover, 1987; Coulter et al., 1999; Key and Runsten, 1999; Bingen et al., 2003). Producer organisations can improve the power balance between producers and contractors, thereby strengthening the incentives for both parties to continue bilateral contracting. In addition, producer organisations can reduce the transaction costs in the contracting arrangement, as the contractor does not have to deal with numerous smallholder farmers but with only one organisation of smallholders. Finally, POs may support CF by channelling and supporting (e.g. by providing legitimacy) the technical assistance needed to help producers increase product quality and uniformity.¹⁷

Domestic and foreign NGOs can be of significant help for smallholders to enter into beneficial CF arrangements. Partly these NGOs can take up the public sector role when the state is unable or unwilling to provide the services needed for making CF viable and sustainable. For the other part, NGOs can temporarily provide services, expertise and credit to farmers and/or contractors to get a CF arrangement off the ground. For instance, the World Development Report 2008 argues that, because participating farmers tend to reap substantial

¹⁷ The role of Producer Organizations in contract farming will be elaborated in a separate paper.

benefits, “the payoff from assisting farmers to make the “threshold investments” can be high”. (World Bank, 2007: 127). NGOs can also support the establishment of a producer association which would help reduce transaction costs for contractors, making the option of contracting with smallholders more attractive.

6 Conclusion

The wide variety in existing contract farming arrangements and their varied success in benefitting smallholders and agribusiness demonstrate that these arrangements are complex and that their performance and potential benefits are highly sensitive to specific features of the products, firms, communities and contractual specifications involved. The contract that emerges for the production of a specific commodity is designed to minimize the costs associated with the production and transaction of that particular commodity.

Contractors engage in CF arrangements when product processing and marketing offer significant returns to relatively large investments in plant or market systems (including brands) with limited alternative profitable use and requiring assured quality, timing and quantity of supply of farm produce. It is widely expected these conditions will expand substantially in agrifood value chains in and from developing countries, for a number of reasons. First, the rapid income growth, particularly in Asia, is shifting consumption patterns away from staple grains towards high-value products such as meat, fish dairy and horticultural products. Second, urbanization, income growth and foreign direct investments are driving an expansion and consolidation among supermarkets. Third, international trade liberalization and improved communication technology greatly expands the trade linkages between farmers in developing countries and consumers in developed countries. All three developments lead to supply chains where production, processing and trading activities, although carried out by independent actors, are increasingly interdependent and therefore require close coordination. Contract farming is one of the main methods to obtain this tight vertical coordination.

Small scale farmers engage in CF arrangements because it is often the only way to start cash crop production, particularly when the cash crop is a high-value, high-risk crop. Entering a CF arrangement means gaining access to credit, inputs, and technical assistance. It also implies a reduction of the market risk associated with specialty products. Most of the studies reported in this paper indicate a positive effect of CF on smallholder income. The issue of smallholder inclusion is still unresolved. Several studies indicated a clear preference of contractors for working with large farmers, and stated a reduction of transaction costs as the main explanation for this bias. Also the inability of smallholders to produce high quality products make them less attractive contract partners. Other studies, however, found no evidence of contractors favouring large scale farmers. In some cases contractors even prefer to work with smallholders because they are more reliable suppliers, given their lack of alternative marketing opportunities or lack of alternative sources for inputs and credit.

This review has also identified a number of conditions that would support smallholder participation in and benefit from CF arrangements, such as supportive state policies, a balanced power relationship, a sellers' market, support from NGOs, and collective action in producer organisations.

One overall conclusion that can be drawn from this review of the empirical literature on the economic effects CF is that these arrangements entail benefits for smallholders. Thus, a more positive picture emerges compared to the more political economy inspired studies of CF that were published in the 1980s and 1990s.

References

- Akerlof, G.A. and R.E. Kranton (2005). "Identity and the Economics of Organizations." Journal of Economic Perspectives **19**(1): 9-32.
- Allen, D. W. and D. Lueck (2002). The Nature of the Farm. Contracts, Risk, and Organization in Agriculture. Cambridge, MA: MIT Press.
- Bingen, J., A. Serrano, and J. Howard (2003). "Linking farmers to markets: different approaches to human capital development." Food Policy **28**(4): 405-419.
- Birthal, P.S., P.K. Joshi, and A. Gulati (2005). Vertical coordination in high value commodities: implications for the smallholders. MTID Discussion Paper No. 85. Washington, DC: IFPRI.
- Bogetoft, P. and H.B. Olesen (2004). Design of production contracts. Lessons from theory and agriculture. Copenhagen, Denmark: Copenhagen Business School Press.
- Bowles, S. and H. Gintis (2002). "Social capital and community governance." The Economic Journal **112**(November): F419-F436.
- Coulter, J., A. Goodland, A. Tallontire, and R. Stringfellow (1999). Marrying farmer cooperation and contract farming for service provision in a liberalising Sub-Saharan Africa. Natural Resources Perspectives (48).
- Dannson, A., et al. (2004). Strengthening farm-agribusiness linkages in Africa. Summary results of five country studies in Ghana, Nigeria, Kenya, Uganda and South Africa. AGSF Occasional Paper 6. Rome, FAO.
- Da Silva, C.A.B. (2005). The growing role of contract farming in agri-food systems development: drivers, theory and practice. Rome, FAO, Agricultural Management, Marketing and Finance Service.
- Dorward, A., J. Kydd, and C. Poulton, Eds. (1998). Smallholder Cash Crop Production under Market Liberalisation. A New Institutional Economics Perspective. Wallingford, CAB International.
- Dorward, A. (2001). "The effects of transaction costs, power and risk on contractual arrangements: A conceptual framework for quantitative analysis." Journal of Agricultural Economics **52**(2): 59-74.
- Dorward, A., J. Kydd, and C. Poulton (2006). Traditional Domestic Markets and Marketing Systems for Agricultural Products. Background Paper to the World Development Report 2008. London, Imperial College, Center for Development and Poverty Reduction.
- Eaton, C. and A.W. Shepherd (2001). Contract farming: partnerships for growth. FAO Agricultural Services Bulletin. Rome, FAO.
- Fafchamps, M. (2004). Market institutions in Sub-Saharan Africa: theory and evidence. Cambridge, MA [etc.], MIT.
- Glover, D.J. (1984). "Contract farming and smallholder outgrower schemes in less-developed countries." World Development **12**(11-12): 1143-1157.
- Glover, D.J. (1987). "Increasing the benefits to smallholders from contract farming: Problems for farmers' organizations and policy makers." World Development **15**(4): 441-448.
- Glover, D.J. and K. Kusterer (1990). Small farmers, big business: contract farming and rural development. Houndsmills/London: Macmillan.
- Grandori, A. and G. Soda (1995). "Interfirm networks: antecedents, mechanisms and forms." Organization Studies **16**(2): 183-214.
- Guo, H., R.W. Jolly, and J. Zhu (2005). Contract Farming in China: Supply Chain or Ball and Chain? Paper presented at the 15th Annual World Food & Agribusiness Symposium, IAMA, Chicago.
- Hendrikse, G. (2003). Economics and management of Organizations; Co-ordination, motivation and strategy. Maidenhead, Berkshire, McGraw-Hill Education.
- Hueth, B., E. Ligon, S. Wolf, and S. Wu (1999). "Incentive instruments in fruit and vegetable contracts: input control, monitoring, measuring, and price risk." Review of agricultural economics **21**(2): 374-389.
- Hueth, B., E. Ligon, and C. Dimitri (2007). "Agricultural Contracts: Data and Research Needs." American Journal of Agricultural Economics **89**(5): 1276-1281.
- IFAD (2003). Promoting Market Access for the rural poor in order to achieve the millennium development goals. Rome, IFAD.

- Keefe, P. and S. Knack (2005). Social Capital, Social Norms and the New Institutional Economics. In: C. Menard and M.M. Shirley (eds), Handbook of New Institutional Economics. Dordrecht, Springer: 701-725.
- Key, N. and D. Runsten (1999). "Contract Farming, Smallholders, and Rural Development in Latin America: The Organization of Agroprocessing Firms and the Scale of Outgrower Production." World Development **27**(2): 381-401.
- Kirsten, J. and K. Sartorius (2002). "Linking agribusiness and small-scale farmers in developing countries: is there a new role for contract farming?" Development Southern Africa **19**(4): 503-529.
- Klein Woolthuis, R., B. Hillebrand, and B. Nooteboom (2005). "Trust, Contract and Relationship Development." Organization Studies **26**(6): 813-840.
- Little, P.D. and M.J. Watts (1994). Living under contract: contract farming and agrarian transformation in Sub-Saharan Africa. Madison [etc.], University of Wisconsin Press.
- MacLeod, W.B. (2007). "Reputations, relationships, and contract enforcement." Journal of Economic Literature **45**(3): 595-628.
- Martinez, S.W. and A. Reed (1996). From Farmers to Consumers; Vertical Coordination in the Food Industry. Agriculture Information Bulletin. Washington, DC, ERS/USDA.
- Masakure, O. and S. Henson (2005). "Why do small-scale producers choose to produce under contract? Lessons from non-traditional vegetable exports from Zimbabwe." World Development **33**(10): 1721-1733.
- Ménard, C. (2004). "The economics of hybrid organizations." JITE **160**(1): 1-32.
- Mighell, R.L. and L.A. Jones (1963). Vertical Coordination in Agriculture. Washington, DC, US Department of Agriculture, Economic Research Service, Farm Economics Division.
- Milgrom, P. and J. Roberts (1992). Economics, organization and management. Englewood Cliffs, NJ, Prentice Hall.
- Minot, N.W. (1986). Contract Farming and its effects on small farmers in less developed countries. MSU International Development Papers. East Lansing, MI, Michigan State University, Department of Agricultural Economics.
- Minot, N. (2007). Contract Farming in Developing Countries: Patterns, Impact, and Policy Implications. Case Study #6-3 of the Program: "Food Policy for Developing Countries: The Role of Government in the Global Food System". Ithaca: Cornell University, New York <http://cip.cornell.edu/DPubS?service=UI&version=1.0&verb=Display&handle=dns.gfs&collection=>
- Miyata, S., N. Minot, D. Hu (2007). Impact of Contract Farming on Income. Linking Small Farmers, Packers and Supermarkets in China. IFPRI Discussion Paper 00742. Washington, DC: IFPRI.
- Nooteboom, B. (2002). Trust: forms, foundations, functions, failures and figures. Cheltenham, UK, Edward Elgar.
- Pomareda, C. (2006). Contract Agriculture: Lessons from experiences in Costa Rica. Santiago de Chile: RIMISP.
- Poppo, L. and T. Zenger (2002). "Do formal contracts and relational governance function as substitutes or complements?" Strategic Management Journal **23**(8): 707-725.
- Porter, G. and K. Phillips-Howard (1997). "Comparing contracts: An evaluation of contract farming schemes in Africa." World Development **25**(2): 227-238.
- Poulton, C., A. Dorward, J. Kydd (2005). The Future of Small Farms: New Directions for Services, Institutions and Intermediation. The Future of Small Farms, Proceedings of a Research Workshop; Wye, UK, June 26-29, 2005. Wye, UK, IFPRI.
- Ramaswami, B., P.S. BIRTHAL, P.K. JOSHI. (2006). Efficiency and Distribution in Contract Farming: The Case of Indian Poultry Growers. MTID Discussion Paper No. 91. Washington DC, IFPRI.
- Reardon, T. and C.B. Barrett (2000). "Agroindustrialization, globalization, and international development. An overview of issues, patterns, and determinants." Agricultural Economics **23**: 195-205.
- Reardon, T. and J.A. Berdegue (2002). "The Rapid Rise of Supermarkets in Latin America: Challenges and Opportunities for Development." Development Policy Review **20**(4): 371-388.
- Royer, J.S. and R.T. Rogers, Eds. (1998). The industrialization of agriculture. Vertical coordination in the U.S. food system. Aldershot, Ashgate.

- Runsten, D. and N. Key (1996). Contract farming in developing countries: theoretical issues and analysis of some Mexican cases. Santiago de Chile, Economic Commission for Latin America and the Caribbean (Report LC/L.989).
- Sáenz-Segura, F. (2006). Contract Farming in Costa Rica. Opportunities for smallholders? Development Economics. Wageningen, Wageningen University. PhD Thesis.
- Sautier, D., H. Vermeulen, M. Fok, and E. Bienabe (2006). Case Studies of Agri-Processing and Contract Agriculture in Africa. Santiago de Chile: RIMISP.
- Sheldon, I. (1996). "Contracting, Imperfect Information, and the Food System." Review of agricultural economics **18**(1): 7-19.
- Shepherd, A.W. (2005). The implications of supermarket development for horticultural farmers and traditional marketing systems in Asia (revised paper). FAO/AFMA/FAMA Regional Workshop on the Growth of Supermarkets as Retailers of Fresh Produce. Kuala Lumpur.
- Simmons, P. (2002). Overview of Smallholder Contract Farming in Developing Countries. ESA Working Paper Rome, FAO.
- Simmons, P., P. Winters, and I. Patrick (2005). "An analysis of contract farming in East Java, Bali, and Lombok, Indonesia." Agricultural Economics **33**(s3): 513-525.
- Singh, S. (2002). "Contracting Out Solutions: Political Economy of Contract Farming in the Indian Punjab." World Development **30**(9): 1621-1638.
- Sonntag, B.H., J. Huang, S. Rozelle, and J.H. Skerritt (2005). China's agricultural and rural development in the early 21st century. ACIAR Monograph. Canberra, Australian Centre for International Agricultural Research.
- Stinchcombe, A.L. (1985). "Contracts as hierarchical documents." In: A.L. Stinchcombe and C.B. Heimer (eds.) Organizational Theory and Project Management. Administrating Uncertainty in Norwegian Offshore Oil. Oxford, Oxford University Press (of Norwegian University Press): 121-171.
- Warning, M. and N. Key (2002). "The Social Performance and Distributional Consequences of Contract Farming: An Equilibrium Analysis of the Arachide de Bouche Program in Senegal." World Development **30**(2): 255-263.
- Williamson, O.E. (1985). The Economic Institutions of Capitalism. Firms, Markets, Relational Contracting. New York, Free Press.
- Williamson, O.E. (1991a). "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives." Administrative Science Quarterly **36**(June): 269-296.
- Williamson, O.E. (1991b). "Strategizing, Economizing, and Economic Organization." Strategic Management Journal **12**: 75-94.
- Wolf, S., B. Hueth, E. Ligon (2001). "Policing Mechanisms in Agricultural Contracts." Rural Sociology **66**(3): 359-381.
- World Bank (2007). World Development Report 2008: Agriculture for Development. Washington, DC, The World Bank.

Appendix 1. Advantages and disadvantages of contract farming

In the literature on CF in developing countries, CF is considered as a way to allocate risk between producer and contractor, as a solution to market failure, particularly in the inputs market, and as an institutional arrangement to reduce transaction costs (Dorward et al., 1998; Key and Runsten, 1999; Eaton and Shepherd, 2001; Dorward, 2001; Kirsten and Sartorius; 2002; Simmons, 2002; Masakure and Henson, 2005; Da Silva, 2005). CF has a number of benefits and costs for farmers as well as for contractors. In this section we just list the costs and benefits of CF that have been mentioned in the literature, without referring to the theoretical or empirical basis of the arguments.

Advantages for farmers

For the producer, CF can solve a number of problems related to risk, high transaction costs and missing markets when compared to spot market transactions.

- Market access can be improved, while risks and costs related to market access may be reduced. Market risks and transaction costs such as caused by uncertainty about contractors and prices are reduced, as contracts provide a guaranteed outlet and typically specify at the beginning of the growing cycle the prices to be paid at product delivery. Thereby, income stability is obtained, particularly if the contract is a long term contract or can easily be renewed.
- Production risks can be reduced as contracts often include agreements on the provision of appropriate inputs and technical assistance.
- The contractual agreement usually includes the provision of inputs by the contractor, thus reducing transaction costs caused by uncertainty about the availability and quality of inputs. Failures in input markets are circumvented by such direct provision and the economies of scale allowed by the larger purchases of inputs by the contractor can be passed on to farmers via reduced costs.
- Contracts commonly include provisions on technical assistance, often to help farmers to raise product quality and thus obtain a higher product price. Without such assistance, farmers may not be willing or able to venture into innovative crop and livestock enterprises as these involve higher risks. At the same time, this technical assistance can enhance farm production and the management skills of the farmer, and spill-over effects might happen if farmers also have non-contracted crop and livestock activities.
- Access to credit is enhanced. Under a resource providing contract, working capital is supplied in kind, via input provision, by the contractor. Such transaction is guaranteed by the commercial commitment between farmer and contractor. By the same token, access to credit for both working capital and fixed capital is enhanced in the case of market specification contracts, because banks may accept the contractual commitment as a sufficient guarantee for the granting of loans.

These advantages of contract are particularly relevant when farmers choose to produce specialties, as these high-value crops entail higher production and marketing risks and higher investments. Contracts may reduce marketing risks as they provide a guaranteed market with often a minimum price, and may reduce production risks as the contractor provides inputs and technical assistance.

Advantages for contractors

The advantages for the contractor also fall in the categories of reduced risk, fewer market failures and reduced transaction costs.

- Contracts reduce transactions costs. Buying on a spot market entails higher screening and selection costs for the contractor than under CF, because under the latter the contractor can influence the production process (indirectly by providing inputs, and directly by managing the production), but also because contract provides an opportunity for repeated interaction which generates information on the actions and products of particular producers.
- Contracts reduce coordination costs for contractors, as a greater regularity of agricultural product supplies makes possible a better coordination of in-house processing activities and better alignment with the demands of their own customers. This advantage is particularly important from a supply chain perspective, where transactions upstream are linked to transactions downstream.
- By providing technical assistance to the farmers, the contractor can obtain more uniform products, which is important for the processing industry but also supplying supermarkets.
- Technical assistance helps to raise product quality and to strengthen compliance to quality and safety requirements.
- Contracts reduce the risk of obtaining sufficient produce at the right time and of the right quality, which may be crucial for processing but also for traders that have entered supplying schemes for supermarkets.
- By providing inputs to all of the contracted farmers, inputs costs per unit are reduced for the farmer, thus allowing lower output prices.
- By contracting with small farmers contractors can benefit from the advantages of family farms, particularly for labour intensive crop and animal production system.
- Access to credit and subsidies may be facilitated for the contractor, as the reduction of risks in the firm's supply chain and the economies of scale associated with contracting operations are conditions that in principle increase a financing institute's willingness to lend.

Disadvantages for farmers

There is also a strand of literature that is quite critical of CF as it leads to a number of disadvantages for the producer. These disadvantages include farmers' loss of autonomy (i.e. increasing dependency and chance of becoming exploited) and increased production risk (Singh, 2002; Kirsten and Sartorius, 2002). Most of the negative effects of CF result from the fact that the relationship between individual farmers and the contractor is uneven, the latter often in a position to exercise power and non-competitive conduct in imposing the terms of the contract (Porter and Phillips-Howard, 1997; Poulton et al., 1998).

- Contractors might renege on contractual terms if market circumstances change. For instance if market prices at product delivery time are substantially different from prices agreed in the contract, contractors may force renegotiation or may just reject product delivered. Such hold-up could be 'justified' by claiming non-conformity to quality regulations. For farmers it is usually impossible or at least very costly to check the appropriateness of the contractor's claim.
- Contractors might intentionally avoid transparency in the price determination mechanisms of the contract, making it very difficult for the farmer to assess whether he has received a proper remuneration.

- Farmers lose flexibility in their choice of farming activities. Bound to a crop or livestock enterprise by a contract, farmers cannot adjust production mixes so as to benefit from market opportunities.
- Contractors may influence prices paid to farmers by setting delivery schedules, particularly when prices are rapidly changing and contractors can adjust the delivery schedule to benefit from market volatility.
- The risks normally associated with monoculture practices are increased. Intensified production of single agricultural crops, or the concentration of animal herds, increases the chances of diseases.
- The risk of indebtedness grows. The downside of easy access to credit is the possibility to incur mounting debts.

Disadvantages for the contractor

Finally, CF also brings disadvantages for the buying firm, as the contract may result in new sources of risk and transaction costs.

- CF entails the risk of contractual hold-up by the farmer. Just as a firm may be prone to renege on contractual terms when market conditions change, a farmer may be compelled to sell all, or part of his or her production, to a third party when prices are perceived to be higher outside the contractual bond. This is especially problematic where alternative markets are easily accessible and where contractual enforcement is weak.
- Contractors face high transaction costs of dealing with large numbers of farmers. Managing a commercial relationship with a myriad of partners is a complex task, requiring investments in personnel, in controls and in monitoring systems.
- Farmers may misuse or even resell the inputs supplied by the contractor. In resource provision contracts, a known problem is the potential use of the distributed inputs in alternative crop and livestock activities.
- Contractors internalize the cost of support services, such as extension, transportation, quality monitoring and financial services, which in competing regions may be provided free of charge by public agencies.
- CF may lead a loss of flexibility to seek alternative supply sources, which is particularly problematic if economic conditions change in favour of alternative raw material.