



# Contract Farming and Other Market Institutions as Mechanisms for Integrating Smallholder Livestock Producers in the Growth and Development of the Livestock Sector in Developing Countries

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## EXECUTIVE SUMMARY

The active and sustainable participation of smallholder livestock producers in the rapid growth and development of the livestock sector in the international arena is seen as bringing about a potential pathway for rural income growth and poverty alleviation in developing countries. However, the route by which these smallholders can get truly involved and take advantage of opportunities in the growing livestock markets is not too clear as there exists a host of barriers to their participation that smallholders, on their own, find difficult to overcome.

Over time, structural transformation in the agricultural sector of developing countries has seen the emergence and spread of contract farming in the production and marketing of agricultural products, in general and of livestock products in particular. The main objective of this literature review is to determine the extent to which contract farming and its variants enable smallholder livestock producers to gain market access, and explore other market institutions for more effectively integrating smallholders into the growth and development of the livestock sector in developing countries.

Section 1 of this paper expounds on the rationale and underlying theoretical framework for the emergence of contract farming with focus on the transaction cost economics approach. Section 2 reviews the literature on the general applications of contract farming and the transaction cost economics framework in agricultural commodities. The main drivers of structural change in agriculture are traced and linked to supply chains and the formation of alternative governance mechanisms that include contract farming. In Section 3, we highlight the trends and typologies of contracts in developing countries. Particular attention is given to case studies on contract farming in livestock in selected countries of India, Thailand, Vietnam and the Philippines. The livestock products discussed include dairy (milk), poultry and pigs. Section 4 gives an assessment of the efficiency and effectiveness of contract farming and its variants as an institutional mechanism for enhancing smallholder producers' access to markets and services for their products, their competitiveness, and their capacity to earn income. Section 5 concludes and proposes areas that need further investigation.

## Rationale and Framework

The literature provides various definitions of contract farming, but generally, they refer to a binding arrangement between two parties consisting of an agro-processing firm (contractor) and an individual producer (contractee) who may be one among other farmer contractees of the firm. They engage in 'forward agreements', with well-defined obligations and remuneration for task done, often with specifications on product properties such as volume, quality, and timing of delivery. This arrangement basically permits the firm to exercise influence on production processes that are delegated to independent farms in a manner that is consistent with its objectives.

The theoretical underpinnings of the phenomenon of contract farming are traced to competing and complementing schools of thought in the economic theory of firm behaviour, property rights and agency behaviour, and industrial organization. In the literature on contract farming, the dominant theoretical framework is transaction cost economics (TCE), following the seminal works of Coase (1937) and Williamson (1979; 1985; 1989), and expounded on by the proponents of the New Institutional Economics (NIE) school, which extends economic theory by giving recognition to the important role of the social and legal norms and rules that underlie economic activity.

Traditional neoclassical economic theory assumes that under conditions of perfectly competitive markets, anonymous economic agents, in the act of voluntary market exchange in pursuit of their own interest, arrive at independent decisions that result in the maximization of gains from trade. Under this environment, the price mechanism bridging supply and demand decisions provides all the information that economic agents need to know. Transaction costs are ignorable, and the 'Invisible Hand' of the market will coordinate individual actions so as to arrive at a socially efficient welfare maximizing solution. Under these conditions, it is in the interest of economic agents to transact everything through classical market transactions (spot market).

In contrast, TCE asserts that economic agents are rationally bounded (there is incompleteness and asymmetry of information) and tend to be opportunistic. Under these conditions, market transactions are fraught with hazards, and measures undertaken by economic agents to mitigate the losses entail costs - transaction costs. The level of transaction costs is influenced, among others, by three transaction characteristics: uncertainty, asset specificity, and frequency of exchange. Where there is uncertainty on the probable action of the other party in an exchange transaction, assuming opportunistic behaviour, transaction costs ensue in undertaking measures to search for more reliable trading partners, negotiating for better terms, and enforcing agreements.

Asset specificity occurs when an economic agent undertakes an investment to engage in a particular economic activity meant for a particular market exchange. While the value of the asset is maximized in that exchange agreement, its value diminishes outside that particular transaction. The undertaking of highly specific investments is prone to 'hold-up' situations when an opportunistic partner to the trade reneges on the agreement for the purpose of extracting quasi-rents. Measures to protect the value of specific investments entail transaction costs.

Frequency of exchange, by itself, does not provide a unidirectional relation with the level of transaction costs. When dealing with homogeneous goods and services produced through the use of non-specific assets, it does not matter much if the exchange happens only occasionally, or the exchange is recurrent. For such products, all information is provided by the market and trade can be made whenever the occasion demands, and consequences are borne by each party without incurring high transaction costs. Combined with asset specificity, however, the connection between frequency and transaction cost comes out. When transactions need to be recurrent, the greater become the chances of one party to behave opportunistically.

TCE asserts that when transaction characteristics are such that direct market exchange entails prohibitively high transaction costs, it is more efficient for the firm to undertake the production of the good that it requires for its own economic activity, i.e., to vertically integrate. The decision to organize economic transaction either directly through spot markets ("buy") or by vertically

integrating (“produce”), however, are two extremes, and are not the only options available to economic agents.

The development of the TCE literature has led to the construction of transaction coordination models in between these two polar points, generally termed as “hybrids”. Between the two extremes could be located three other categories of transaction organization options, arranged according to diminishing importance of the market’s ‘Invisible Hand’ (increasing importance of internal or ‘hierarchical’ control). These are, respectively, (i) Specification contracts, (ii) Strategic alliances, and (iii) Formal bilateral cooperation. Along this framework, TCE asserts that profit-maximizing agents, with the production technology at their disposal (and the underlying production costs) and transaction characteristics of the exchange (and the entailing transaction costs), will choose a particular organization of economic activity that minimizes the sum of production and transaction costs.

The TCE approach to explaining contracts, however, is not without criticism from other schools of thought. In particular, the assumptions of the TCE framework have been criticized because of its overemphasis on transaction costs. Since transaction costs are not tangible, they could not lend themselves to direct measurement for verification. The crucial assumption of opportunistic behaviour is also challenged by the existence of enduring social relations that are based on trust developed through repetitive transactions. Notwithstanding the criticisms, the TCE remains to be the dominant approach used in the literature in investigating the contract farming phenomenon.

## General Applications of Contracts in Agricultural Commodities

The current literature on contract farming is set on the more general literature on the emergence of supply chains in the context of the growing commercialization of agriculture that is triggered by the structural transformation of this sector in developing countries. Among the main drivers of this transformation are the changing demand conditions brought about by increasing per capita incomes and urbanization. These in turn bring about changes in the composition of the food consumption basket (diet) with increasing demand for higher-value products, product quality, food safety, and convenience. On the supply side are technological changes toward more efficient farm production and food processing, exploiting economies of scale where they apply. Both changes in demand and supply conditions are set within a globalizing trade environment, where industrialized and developing country markets are becoming more closely integrated. On the distribution side, the emergence of supermarkets in developing countries, in varying degrees of reach and diffusion via domestic and foreign direct investments, has created innovative and efficient forms of procurement of agricultural products. These innovations are also facilitated by the advancements in information technology to more quickly respond to changes in consumer demand and preferences in domestic urban markets, if not global markets as well.

The modernization of supply chains and their linkages to major urban and export markets has induced new relationships between processing enterprises and individual farmers. For greater competitiveness, each function along the supply chain must be linked by better-organized services in technology use in production, transport and marketing of products. But apart from improving efficiency in product transformation, a key to greater competitiveness is the reduction of transaction costs at each stage. This creates a need for tighter control of the processing firm over production processes and inputs at the farm level and all along the supply chain. This would consequently entail a new set of rules and regulations for governance by institutions as well as markets.

Under a commercializing and globalizing agriculture, the drivers of structural change induce a movement from the markets for homogeneous traditional commodities toward the markets for specialized or highly differentiated goods. Dealing with products and product characteristics lead to various configurations of transaction characteristics (asset specific investments, buyer and seller

uncertainty, and frequency of transactions) which point to alternative governance structures that could reduce transaction costs.

Applications of contract farming in agricultural supply chains in developing countries are found in transactions dealing with high-value products such as fruits and vegetables, destined either for export markets or supermarkets in highly urbanized centres. The Perishability and related characteristic of quality generate uncertainty in the transactions. Perishable products must be moved quickly and transacted frequently. When product quality becomes an important issue in market exchange, a buyer is confronted with uncertainty over the product quality particularly when quality is not readily recognizable in the form of the transacted product, and known only when the product is subsequently subjected to processing or is consumed. On the other hand, the seller is confronted with uncertainty over the price received for supplying a higher-than-normal quality of product. When the spot market fails to recognize product differences, and fails to award proper price premia to higher-quality products, economic agents would look for other governance mechanisms that more efficiently solve the problems posed by uncertainty.

The production and marketing of differentiated products, catering to particular preferences of higher-income urban consumers or export markets also induce the undertaking of asset-specific investments focused on the production and supply of these products. Committing such investments, however, subjects the particular economic agent to risks of hold up by the possible opportunistic behaviour of trading partners in a market transaction. Mitigating against such risks induces a search for alternative governance mechanisms by an agricultural enterprise to lower transaction costs.

Addressing the problems posed by transaction costs poses a particular challenge in less developed country settings where in general, the marketing and institutional infrastructures and services that link various parts of the supply chain for agricultural products are not that smoothly functioning. These impose barriers on the flow of trade from farm production, particularly in rural areas, to the major centres of demand. The existence of market failures or public goods provision failures between any two exchange points along the supply chain raises transaction costs, creating barriers to market exchange. Thus, the importance of the search for more efficient modes of governance to conduct agricultural and marketing transactions.

## Trends and Typologies of Contracts in Developing Countries

The documentation of contract farming as early as the first half of the 20th Century refers mostly to the engagement in vertical coordination by agribusiness enterprises in the industrialized countries in North America and Western Europe, particularly in the production and processing of vegetables and fruits. Contract farming in poultry, and then later in hogs, followed suit in the second half of the last Century. In the US, the poultry industry is almost fully vertically coordinated via contracts. In the EU, contract arrangements had been encouraged by the production systems that evolved under the EU Common Agricultural Policy, where the volume of output and quality of products are tightly controlled, particularly in highly perishable products such as dairy and poultry, fruits and vegetables. In Asia, the earlier adopters of vertical coordination in poultry were Japan and South Korea.

In the less developed countries in Latin America, Asia, and Africa, the exact origins of contract farming are difficult to trace. Earlier practices of vertical coordination appeared to have been related to the operations of transnational agribusiness companies or state-owned enterprises in the plantation sector producing commodities destined for export markets such as banana, tea, tobacco, sugar, oil palm, and rubber. In the midst of the macro-economic structural adjustments programmes that quite a number of developing countries underwent in the second half of the last Century, government support to market intermediation in heavily traded commodities were discontinued, and many state-owned enterprises collapsed. The changing conditions in the global market for commodities also induced a restructuring of the organization of agribusiness in plantation crops. From the operation of large single plantations, a shift had been observed in favour of production

through contracts that reduced the risks to investments in large tracts of land and farm equipment by large agribusiness enterprises.

The more recent spread of contract farming in developing countries appears to have followed also the path that Reardon (2006) describes as the three 'waves' of diffusion of supermarkets by multinational agri-food companies in Latin America, Asia, and Africa. This link is not far-fetched as the diffusion of supermarkets also brought about the spread of new procurement strategies by these enterprises to secure the supply of a consistent volume of high quality agricultural products destined for domestic urban centres and even for export markets.

In the literature, there are certain types of farm products that were more amenable to vertical coordination than others. There is no one-to-one correspondence, however, as the production and marketing of these products should be taken in the context of the given market and institutional environment in developing countries. These products either have one or more of the following characteristics: high perishability, high quality specificity, high labour intensity, and high value-to-weight ratio. Generally, these products include those destined for export markets and products that require traceability and/or food safety certification even if they are destined for the domestic markets.

In the contract farming literature, the TCE framework is extensively used in linking combinations of agricultural transaction characteristics (uncertainty, asset specificity, frequency) with the more likely 'hybrid' vertical coordination governance categories (Specification contracting, Strategic alliance, Formal bilateral cooperation). The first two belong to the general category of 'Neoclassical Contracting', while the third belongs to the category of 'Relational Contracting'. In developing countries, most contract farming schemes fall under Neoclassical contracts where the integrator company (contractor) and the farmer (contractee) maintain their respective status as autonomous economic agents. Relational contracts were rare.

Under the category of Neoclassical contracts, the literature also identifies types of contract farming according to which information asymmetry or market access barrier (market failure) the vertical coordination mechanism addresses. These types also indicate the intensity of involvement or control of the integrator company in the production activities of the farmer. These are the i) market specification contract, ii) management-providing contract, and iii) resource-providing contract. These types, however, are not necessarily exclusive. A particular contract may be placed in one of the types, but may contain some features of another. The straightforwardness or complexity of the features of the integrator's involvement in the farmer's production activities could then be related to the categories of governance of transaction coordination according to greater farmer autonomy on the one hand, or tighter hierarchical control on the other.

## **Contract Farming in Country Case Studies**

In the case studies on contract farming in livestock in the selected developing countries of India, Thailand, Vietnam, and the Philippines, the products engaged in were dairy, poultry and pigs. Contracts were either formal (written) or informal. Formal contracts, in terms of their specific provisions, were of two types: (i) fixed-fee or wage contracts, and (ii) forward-price or profit-sharing contracts. Most fixed-fee or wage contracts had the properties of a 'resource-providing' contract, with also some features of a 'management-providing' contract, with intensive supervision of the production processes at the farm by the integrator company. Forward-price and profit-sharing contracts have closer relations to a 'market-specification' contract, but with certain features of a 'management-providing' contract from the receipt of the farmer of livestock services from the integrator.

In industrial-type broilers, in all relevant countries, formal contracts between integrators and farmers dominate over informal contracts. Formal contracts involved mostly large-sized farms (>10,000 birds per cycle/farm). Strict rules govern volume of inputs provided by the integrator and volume of output turned out by the farmer, with also provisions on some quality specifications on individual bird output. Integrators have proprietary rights over the technology, inputs, and output.

In milk production, both formal and informal contracts exist. In Thailand and Vietnam, where the dominant final product is ultra-high temperature (UHT) processed milk for urban consumers, processors engage in strictly defined formal contracts with farmers, with scale of production depending on the predominance of small, medium or large producers in the area of coverage. In India, outside the contracts within cooperatives, the emerging contracts involve processing companies who engage in a formal contract with an intermediary (collector) in the supply of fresh milk, while the intermediary engages in informal contracts with farmers, mostly smallholders.

In pig production in Thailand, Vietnam and the Philippines, contracts exist for industrial-type hogs. Formal contract growing, however, is not yet the norm even in Thailand which has the more advanced pig industry among the three countries. Unlike in broiler chicken where the sources of day-old-chicks and formula mixed feeds are controlled by the few large broiler integrators, there are alternative sources of commercial breeding and fattening stock in pig raising, and there are alternative sources of feeds or feed ingredients. In all countries, formal contracts involved larger-scale farms (>100 heads per cycle per farm). In contrast with the other countries, in the Philippines, there are formal contracts involving smallholders (20-80 heads of pigs per cycle per farm) and a medium-sized feedmilling-livestock trading - meat processing cooperative. While the contracts are formal (written), the contract does not typify the usual big company - large farm contract, between two impersonal parties pitted against each other. Rather, social relations are relatively informal, and the trust level between the smallholder pig producers and the cooperative is relatively strong, cultivated after years of repeated successful transactions, with the cooperative located in the same peri-urban area as the surrounding villages where the farmers are. Moreover, the smallholders are themselves members of the same cooperative, and thus have a stake in the institution itself.

In Vietnam, informal contracts exist with cooperatives and with input and/or output traders in the production of industrial-type pigs. For indigenous pigs, informal contracts exist between pig producers and output traders. While members of pig raising cooperatives mostly involve larger-scale producers, those engaged in informal contracts with traders tend to be mainly smallholders.

Thus, there are similarities as well as differences in the nature of the contracts in the case countries. These varied depending on the length of history and level of development and maturity of formal contract relations in the countries and on the strength of the legal and institutional framework to enforce contracts. They also varied according to the nature of the product in terms of the appropriation of the benefits to the employed technology by the integrator, the target markets for the output, as well as the dominant scale of production of the commodity in each country or location within a country.

The existence and persistence of informal contracts between traders and farmers are based mainly on social capital and trust, where repeated satisfactory transactions reduce uncertainty and build reputation, thereby also effectively reducing transaction costs.

## **Assessment of the Efficiency and Effectiveness of Contract Farming as Market Linking Institutions for Smallholder Livestock Producers**

### **Nature of Contracts**

In the case countries of India, Thailand, Vietnam and the Philippines, the nature of livestock production contracts engaged in by the integrator and the farmer differs according to the product in question in the transaction. Yet even for the same product, there are variations across countries that tend to be driven by the changing needs of the markets on certain product attributes, types of transaction costs that need to be hurdled, and the distribution of power between integrator and farmer.

In formal contracts, the terms are adaptations of contract growing agreements in industrialized countries, and modified according to the institutional environment in developing countries

concerned. Contracts are mainly in the form of fixed-fee or wage contracts, with some forward-price or profit-sharing contracts. Under fixed-fee contracts, the integrator provides all intermediate inputs required to produce the output. The standard input-output ratios and quality attributes are stipulated. The farmer is then paid an agreed upon fee in exchange for his labour, management, and use of facilities. The integrator assumes the market risks of changes in input and output prices. On the other hand, production risks impact on both parties.

Under forward-price or profit-sharing contracts, the integrator still provides the intermediate inputs but on credit at agreed-upon prices. The cost of these inputs is then charged to the farmer when the output is sold. A minimum forward-price of output could be guaranteed to the producer. Under profit-sharing contracts, the prevailing market price for the output at the time of sale is used. The profit is split between the two parties, with both assuming the market risks. Production risks are shared, so there is incentive for both parties to aim for maximum activity profit.

Formal contracts in broiler production are mainly of the fixed-fee type in India and the Philippines, but have shifted to guaranteed forward-price contracts in Thailand. In pig production in Thailand, Vietnam and the Philippines, contracts with large-scale producers (>100 hogs per cycle per farm) are dominantly fixed-fee contracts. Formal contracts between smallholder pig producers and a cooperative in the Philippines are profit-sharing contracts.

In informal contracts found in the production and marketing of dairy in India and pigs in Vietnam, the terms of agreement are more difficult to neatly categorize. They are, however, closer to variations of profit-sharing contracts rather than fixed-fee contracts. In the dairy case in India, the contract offers the guarantee of supply of intermediate inputs, livestock services, and market outlet for the smallholder producers, in exchange for the guarantee of supply of milk to the processor, through its intermediary. In the case of pig production in Vietnam, the agreement lies more in the guarantee of supply of intermediate inputs to the farmer. Some agreements guarantee the marketing of the output, but most leave the producers on their own.

In general, for formal contracts, when integrators are dealing with larger-scale farmers, fixed-fee contracts are offered, and integrators exert quite a heavy market power, shifting as much production risk to the producer. When producers have sufficient capacity to manage and control their production performance, guaranteed forward-price contracts emerge.

Informal contracts are mainly undertaken by smallholders with market intermediaries in the interest of getting assured supply of intermediate inputs and livestock services on credit. Guaranteed outlet for the output could be an additional feature, but with the exception of dairy in India, it is often a missing component.

## **Determinants of Participation in Contracts**

Except in industrial-type broiler chicken production in Thailand and in the Philippines, formal contracts are not yet the norm in the production of livestock products in all the case countries examined. Although independent smallholder livestock producers perceive benefits and advantages in engaging in contract production, the reasons for not being engaged in one pointed to perceptions on the non-existence of such offers in their own localities. If these offers existed, certain household and farm characteristics did not make them qualify to be chosen, among which is the small-scale of activity.

Econometric estimation of the determinants of participation in formal contract farming in the case countries examined did not yield uniform directions of impact of significant factors influencing participation or non-participation. In pig production in Vietnam, the characteristics of low educational attainment, non-specialization in pig production, and small-scale of operation, act as barriers to participation. In India, after achieving a particular scale of production, gaining more experience in the activity, and having the support of non-farm income sources, producers tend to shift back to being independent producers, possibly indicating that the terms of the contract were too stifling.

In informal contracts, there are also no common and uni-directional determinants of participation. In dairy production in India, greater experience in dairy production appears to be a human capital asset valued by integrators. In pig production in Vietnam, farmers who are more likely to engage in informal contracts with a cooperative are those with higher levels of education, greater experience in pig production and specializing in the activity, and those who are farther away from the market centres.

In general, participation in contract farming reflects two sides of the coin: the hurdling of physical and human capital qualification barriers put up by the integrator, and the valuing by the farmer of the services provided by the contract arrangement as opposed to undertaking the production and marketing of the product independently. Even when options are there to engage in contracts, if the farmer deems he has what it takes to undertake the production and market risks on his own, and reap the entire fruits of the activity, he may prefer to operate as an independent producer.

### **Efficiency of Contract Farming**

Transaction cost economics, in its treatment of the resort to vertical coordination of operations, asserts that when transaction costs are significant, economic efficiency gains could be derived from vertical coordination rather than engaging in spot markets. These could be reflected in gains in physical productivity, reduction in costs per unit of output, and gains in net returns per unit of output. Reduction in uncertainty of quality of output could also lead to the capture of the corresponding price premia by producers or suppliers.

Comparison of net returns per unit of output between contract farmers and independent producers in dairy, broiler chicken and pigs in the case countries have mixed results, although there are more instances where the advantage was on the side of the contract farmers. The cases where the reverse position occurred were in broiler contracts in India. This is consistent with the results in the determinants of participation where those with better human and physical assets, and with higher scale of operations, were independent producers. Those with lesser means could get into the economic activity with the assistance of contracts, but at a price. In Vietnam, the comparative performance varied by type of pig production activity, and on whether exotic or mixed breeds of pigs were used. In general, participation in contracts, whether formal or informal, induced greater adoption of exotic breeds of pigs. The net income advantage of contract farmers, however, was more consistent in the raising of mixed breeds rather than with exotic breeds.

### **Effectiveness of Contract Farming**

Within the context of the increasing global integration of agricultural markets, the development of supply chains in international trade, and the diffusion of supermarkets in developing countries, contract farming has often been looked upon as a system that could integrate smallholder producers in rapidly developing mainstream markets. The effectiveness of contract farming arrangements as an institution could be viewed from the perspective of their success in involving smallholders in such schemes. However, the investigation on effectiveness should not just stop at the mere inclusion of smallholders, but must also assess whether the engagement in such schemes were, on the whole, beneficial for such households rather than lead them to lesser incomes, or even to impoverishment.

It is unfortunate, though, that there is very scant literature that investigates the effectiveness of contract farming in livestock products along these lines. A limitation in the literature on the impact of contract farming is that, while most smallholder livestock production in developing countries takes place under mixed crop-livestock production systems, most of the studies focus solely on the performance of the livestock activity undertaken under contract. Under conditions where various farm activities compete for limited household labour and other resources, improvements in income from more intensified livestock production under contract may lead to a reduction in household resources used in the other economic activities. This could then lead to a corresponding reduction in income in these other activities. Of the few studies available, one is not on livestock but on fruits and vegetables in China, where contract farming does improve incomes both at the activity level and at the household level. Another study is on informal contracts in pig production in rural Vietnam, where contracts improve pig production income but the same conclusion cannot robustly

be said about the total household income level. The conditions under which one or another outcome is achieved could be the subject of deeper investigation.

Another angle that could be pursued is to look at the longer term impacts of engagement in contracts on activity performance, i.e., the stability of incomes derived over time. The literature on contract farming in developing countries is not yet rich along these lines. There are a few literature in the US broiler industry in particular, with perceptions of an imbalance in the terms relating to the distribution of production risks as unfairly tilted against growers, where contracts were on an annual basis, with no certainty for renewal. Notable is that these are documented cases in an industrialized country setting where the nuances of contract growing are already very much advanced, and the legal framework for contract enforcement is already one of the most sophisticated. In less developed countries, one can assert that the terms of formal contracts in broiler and industrial-type pig production are even more tilted in favour of the integrators as they could put to their advantage the asymmetry of information about the markets over producers, and exploit their stronger bargaining position over individual farmers, where the legal and institutional framework to enforce contracts is relatively weak. The perceptions by formal contract growers of the inequity of terms is confirmed in the case studies on broiler contracts in India and in Thailand, and fixed-fee contracts in industrial-type pig production in northern Vietnam. In Thailand, the shift toward guaranteed forward-price contracts in broiler production appears to have stemmed from the dissatisfaction with the fixed-fee contracts. In all cases, however, contract growers indicated preference for continued engagement in formal contracts, albeit with more favourable terms.

Finally, a third angle in investigating the effectiveness of contract farming as a system that integrates smallholder livestock producers into the growing mainstream markets is determining whether or not contracts exhibit a scale bias. In the case countries compared, for formal contracts in broiler and industrial-type pig production, it was often the case that there were minimum capital and scale requirements, the size of which varies depending on the level of development of the particular industry and on the predominant scale of production in each country. For informal contracts, there is generally a greater flexibility by market intermediaries in accommodating smallholder producers, as evidenced in dairy contracts in India and in pig production in northern Vietnam. In these cases, the 'reputation' on the ability of producers to keep the agreement carries greater weight than simply the scale of production of the farmer.

There are, however, cases of formal contracts in fruits and vegetables, and also in industrial-type pigs in a few countries, where integrators do engage in contract with smallholders. In these cases, it is the human capital and the quality of physical assets to successfully undertake the activity that mattered, rather than the scale of production per se. In addition, the proximity between the integrator and the farmer, the social capital that connects the two parties to the contract, and the element of trust provide for enduring production-marketing relationships. These cases, however, are the exceptions rather than the norm.

## Conclusion and Way Forward

The theoretical bases of the transaction cost economics framework of the analysis of the resort to vertical coordination rather than through spot markets in transactions governance are quite on firm ground. Competing as well as complementary approaches also exist and are recognized. However, while the theoretical literature points to an array of alternative vertical coordination schemes according to the degree of hierarchical governance in transactions, the literature on the applications of contract farming in agriculture and in livestock production have dominantly concentrated on one form of coordination mechanism - the formal contract between and integrator company (contractor) and the farmer (contractee).

The focus on formal contracts is directly linked to the growing importance given to the analysis of high-value agricultural supply chains in their role of responding to structural changes being brought about by the increasing globalization of agriculture and the emergence of supermarkets, and the concern on how smallholder producers in developing countries can be included in domestic and international trade, in a regime where standards on product quality and food safety are increasingly

coming into play. Under these conditions, attention is given on how contract farming accomplishes a number of tasks related to the consistency in delivering a required volume of the output, producing a product with particular quality attributes such as freshness, uniformity, texture and taste, among others. Other requirements may include that products are certified to have passed food safety standards, or that they have been produced in an environmentally friendly manner.

The literature on the various applications of contract farming in crops and in livestock, indicate that in general, contract farming is an important mechanism in its relative success in accomplishing the tasks as laid out above, and in delivering the products demanded by export markets, as well as high-end markets in the domestic scene, as mediated by the growing supermarkets in developing countries. On the side of the contract farmers, most of the studies do point to the greater access to high-quality inputs and services, and higher activity net returns per unit of output registered by contract growers as compared to independent farmers producing the same product, although there are cases where the reverse has been exhibited with respect to net returns.

In terms of the effectiveness of contract farming in integrating smallholder livestock keepers in mainstream markets in developing countries, the literature reveals that in general, formal contracts between integrators and contract farmers tended to select the larger-scale producers. Under situation-specific conditions, however, where the dominant production scale is small, integrators do have to contend with engaging into contract with smallholders, but screen them according to their physical and human capital, i.e., their capacity to deliver the required output.

On whether contract farmers obtain longer-term benefits in terms of the sustainability of net returns, the scant literature that has explored this has mixed results. In general, these are country-specific, depending on the relative distribution of market power between integrator and the farmer, the level of development of the institutional and legal system in the enforcement of contracts, and the latitude of options of farmers as conditioned by their physical, human and social capital to undertake production independently or engage in contracts with other parties.

The review also concludes that are very few studies that have explored informal contracts between smallholder livestock producers and their intermediaries. In the context of integrating smallholder producers in developing countries to mainstream markets, the richness of analyses on formal contracts involving high-value products and high-end markets also mirrors a gap in knowledge and understanding on the extent to which informal forms of vertical coordination lower transaction costs, efficiently link producers to markets that are vital to their livelihoods, and increase their incomes.

The review proposes that this glaring gap in the context of developing countries be addressed by refocusing the field of investigation on two inter-related areas where smallholder livestock producers predominate as stakeholders. These are: (i) contracts outside the boundaries of formal contract growing schemes, and (ii) differentiated livestock products outside the narrow confines of high-value industrial-type products for export markets and supermarkets.

In developing countries, forms of informal contracts were seen to be more prevalent. The richness and sophistication of the methods in the literature to analyse formal contracts could be adapted and modified to investigate informal contracts. Particularly in rural settings, the formal institutions and legal framework for enforcing formal contracts are not yet that firmly developed. Within this context, the stability of economic transactions are strongly influenced by trust-based relationships built upon the increasing frequency of successful transactions, by the negative impacts of social sanctions on breaching trust, and by the high cost of searching and switching to other transaction partners who may offer higher returns, but may end up to be less reliable. Deeper investigation on more informal forms of contracts could take these deeply-rooted social norms and explore their potentials as social capital that smallholders and their contract partners can exploit in the development of alternative market institutions that could efficiently and equitably raise the level of market access by smallholder livestock producers beyond those that are obtainable from infrequent and incompletely-informed transactions in traditional market exchanges. One of the informal institutions that could be the subject for deeper investigation on its economic and social functions in market intermediation and in addressing transaction cost problems with smallholders is the 'farmer organization'.

The area of high-value livestock products for exports and for supermarkets has traditionally not been the realm of the vast majority of smallholders. This is not expected to radically change in the near future gauging from the distance between sophisticated capacities needed to meet formal standards for product quality and food safety and the capacity of smallholder livestock producers and the standards prevailing in informal market institutions which they rely upon to engage in trade with their products. On the other hand, there is that large part of domestic market demand for livestock products by significant sections of households in main urban centres as well as regional markets, toward which most smallholder production is directed. For these consumers, demand for qualitatively differentiated products is also expressed in terms of their willingness to pay a price premium to obtain livestock products with distinct quality characteristics (freshness, taste, flavour, texture, among others) that normally associated with non-industrial-type of livestock breeds or production processes. The growth of such domestic markets for differentiated livestock products, and the development of alternative institutional market arrangements that would more efficiently communicate information on product differentiation (quality, production process, food safety), and a system to guarantee credibility of such qualitative differences, should work to create value where it is sought. This should provide incentives for smallholders to create greater value in the livestock activities that they currently undertake. At the same time, the development of such domestic market would also offer consumers of all income brackets a wider range of livestock products to choose from, not just between supermarket brands.