

## CHAPTER 18

### EXCLUSION OF SMALL-SCALE FARMERS FROM COORDINATED SUPPLY CHAINS

*Market failure, policy failure or just economies of scale?*

CORNELIS (KEES) L.J. VAN DER MEER

*Agriculture and Rural Development Department, World Bank, Washington DC,  
USA. E-mail: cvandermeer@worldbank.org<sup>1</sup>*

**Abstract.** Coordinated supply chains are rapidly increasing in importance in global food markets. They are commercial tools for competitive strategies, assuring quality, food safety and better logistics. They serve high-end markets, especially in industrial countries, but increasingly also in developing countries in urban areas with relatively high incomes. However, the share of production in developing countries marketed through coordinated supply chains is still small. There is widespread fear that small-scale farmers will be excluded from coordinated supply chains. Empirical evidence is mixed; there are abundant examples of successful inclusion as well as of painful exclusion. In some cases, economies of scale are such that only large-scale enterprises can compete successfully in global markets. But, in many other cases there is no level playing field. Analysis of factors that contribute to inclusion and exclusion indicates that there are market failures and policy failures contributing to relatively weak competitiveness of small-scale farmers. Hence, public intervention can be warranted.

**Keywords:** food safety; incentives; public sector; private investments; farmers' organization; risks; contracts

#### TRENDS IN FOOD MARKETS

Rapid changes have taken place in global food markets in recent years. Changes in consumer demand, food safety concerns and the rise of modern retail systems are the main drivers for these changes. With higher income and changing lifestyles, demand has increased for more variety, higher quality, year-round supply of fresh produce, 'healthy' food, convenience and value added. There is a rapid increase of demand for 'ready-to-eat' food. And, last but not least, consumers require safe food, and they have increasing concerns about the social and environmental conditions under which food is produced.

Food industries, supermarkets and food services compete for the market shares and market power by trying to meet consumers' preferences. They have become important buyers in global markets and ask for specifications that meet consumer

*R. Ruben, M. Slingerland and H. Nijhoff (eds.), Agro-food chains and networks for development, 209-217.*

© 2006 Springer. Printed in the Netherlands.

demand. These private-sector specifications are often much more demanding than public-sector requirements of food safety and quality. Food industries serve consumers with attractive processed products. Supermarkets try to offer an attractive assortment of products at a one-place-to-shop. Food services – restaurants, canteens, fast-food outlets – offer direct service to consumers, which by-passes supermarkets. The market share of food services is growing faster than that of supermarkets in many countries.

Information technology, logistics and advances in food processing and post-harvest handling have greatly enhanced the development of global sourcing and retailing. Trade liberalization has contributed to a rapid growth of international trade in food, especially for fruit, vegetables and fisheries products (Diop and Jaffee 2005; Hallam et al. 2004).

Economies of scale are important in retailing, transport, logistics and processing, and there is a clear concentration among retailers, food services and food processors. Yet, there is heavy competition from which companies try to escape through strategies of product differentiation, branding of products, and product and market innovation.

Food safety concerns have been an important accelerator of changes in food market development. Many countries have seen food scandals and food scares. Most important examples are BSE, high residues of pesticides and antibiotics, dioxin and toxic chemicals in the food chain, *Listeria*, *Salmonella* and other microbiological hazards, hepatitis, and recently, avian influenza. These scandals and scares received major attention in the media and contributed to consumers' concerns. It is fair to say that consumers have become more suspicious about the trustworthiness of food regulators, scientists and the food industry, and in many countries this translated into political pressure to strengthen public control. Fears of bio-terrorism have added to this. As a result, food laws and regulations have been revised in Japan, the EU, the USA and elsewhere, responsibilities have been sharpened, and border controls intensified.

The private sector has been much affected by food safety crises over a decade or so. It sometimes experienced heavy losses because of stocks that had to be discarded, interrupted supply, loss of business, and damage to company and brand name. A number of cases resulted in bankruptcies. Nowadays, most food companies treat food safety as an important commercial risk, but also as a subject with opportunities to distinguish themselves from competitors. They deal with food safety risks through increased control of the supply chains from farm to table. They abandon open markets with anonymous suppliers and instead turn to integrated or coordinated supply chains. This usually involves reliance on preferred suppliers who assure safety through tracking and tracing, and independent certification of good agricultural and good manufacturing practices.

These trends in consumer demand, retailing and food safety management are most visible in the high-income industrial countries, but in developing countries the same trends can be observed in urban areas with relatively high incomes, although the impact levels are still lower.

## COORDINATED SUPPLY CHAINS

Coordinated supply chains are durable arrangements between producers, traders, processors and buyers about what and how much to produce, time of delivery, quality and safety conditions, and price. They often involve exchange of information, and sometimes also help with technology and finance. They are usually initiated by investment of private traders and food companies, who act as chain leaders. They have characteristics of partnerships and joint interest. By contrast, relations in open supply chains are usually limited to transactions only. There are hardly contractual relations and little clear loyalty between buyers and sellers. In fully integrated supply chains, on the other end of the spectrum, one company performs all activities from production to processing and wholesaling on its own account without partnering with other entities. Here the intra-firm handling has replaced market transactions. Coordinated supply chains as an institution have to compete with atomistic markets on the one hand and with the firm that completely controls the supply chain on the other.

Coordinated supply-chains well fit the logistics requirements of modern food markets, especially those for fresh and processed perishable food. They can be used for process control of safety and quality. This is more effective and efficient than only control at the end of the supply chain. Companies cannot control each single package that is sold; they need total quality and safety management as well. Companies use coordinated supply chains also as tools in competitive strategies, such as for sales promotion, labelling and branding.

With the emergence of coordinated supply chains, competition is increasingly between supply chains rather than between individual firms.

In the past ten years, coordinated supply chains spread rapidly in food markets of the industrial countries. The spread mainly depended on increase of sophistication in consumers' demand, stringency of quality and safety requirements, and the possibilities of efficiency gains through improved logistics. This means that penetration is highest in the market segments that cater for the top-end retailers in industrial countries. It is higher for perishable products than for staples, because of the higher food safety risks. Certain product and market segments in the food-processing industries have higher risk and vulnerability than others, such as baby food and dairy products. They use stringent supply-chain control for managing risk. Restaurants and other fast-food chains are also very vulnerable to food scandals, hence, coordinated supply chains play prominent roles. In bulk product segments with lower quality and safety risk, coordinated supply chains play modest roles at best.

In developing countries the pattern is similar to that in industrial countries, but the level of penetration of coordinated supply chains is much lower. Coordinated supply chains are relatively widespread in the small production segments that cater for demanding export markets, especially those for perishable products and sensitive processed products destined for industrial countries. They are emerging slowly in the perishable products for the domestic supermarket segments, international hotels, modern restaurants, and food processing. They are virtually absent in the large traditional food and commodity markets.

Although coordinated supply chains are spreading rapidly, in both more and less developed countries, the share of small-scale farmers in developing countries affected by them is still small. An example is the spread of coordinated supply chains in China. The export share of vegetables is about 1 percent of the volume of production, and of fruits about 2 percent (*The China statistical yearbook; China customs data*). The share of fresh fruit and vegetables that goes through supermarkets in Shanghai, the country's most developed city, is less than ten percent and a significant part of that product is still sourced from open wholesale markets (the author's interviews). This means that for the country as a whole the share of fruits and vegetables that goes through coordinated supply chains is a few percent at most.

Contract farming arrangements are coordinated supply chains or parts thereof, and while much of the literature on contract farming is relevant to coordinated supply chains, for brevity it is not addressed explicitly here (Baumann 2000; Eaton and Shepherd 2001).

*What are the incentives for investing in coordinated supply chains?*

Why would enterprises – and farmers – invest in the formation of coordinated supply chains? Why would a trader or processor try to become a chain leader? Advantages can be that better prices can be obtained. Supply-chain control may help in achieving higher quality and safety standards, which command better prices. It may result in getting or maintaining access to higher-end markets, which pay better. It may be a pre-condition for successfully adding value to primary products, such as cleaning, packing for supermarkets or processing. Advantages can also be reduction of cost through higher efficiency and reduction of losses. In particular, in fresh produce losses can be high because of uncoordinated supply and limited shelf life. Transaction costs may be lower if the supply chain is shortened by bypassing traditional markets. Demand for regular daily supply of fresh product or supply for retailers or processors can only be met through coordination in the supply chain, and the supplier who can organize that successfully will have a stronger market position. This is closely related to achieving more economies of scale and scope. And, last but not least, managing risk successfully can also require coordination between producers, traders, exporters and buyers. Often advantages include a mix of these benefits. But, benefits come with costs and the decision to invest in a coordinated supply chain is a commercial one. It is based on assessments of costs, benefits and risks.

*Can small-scale farmers participate in coordinated supply chains?*

There is a widespread concern among development specialists that small-scale farmers are excluded from coordinated supply chains. This fear has been strengthened by several studies led by Tom Reardon on the rapid growth of supermarkets in developing countries, which point at drastic impacts for and

exclusion of small farmers from supermarket supply chains; Reardon and Berdegué (2002) is one of the leading studies in this field.

Small-scale farmers have particular strengths and weaknesses for participating in high-end markets, compared to commercial farms. The important question is whether supply chains with small-scale farmers can compete successfully with supply chains with commercial farms and with integrated supply chains.

The main strength of small-scale farmers, which comes up frequently in interviews and literature (interviews by the author and, for example, Baumann 2000, p. 31) is that their production cost in labour-intensive products is often 20-40% lower than that of large-scale commercial farms. The latter have high overhead and supervision costs and paid labour is generally less motivated than are self-employed farmers. In some cases, where lack of access to land forms an obstacle to the emergence of commercial farms, access to land is a competitive strength of small-scale farmers.

Important weaknesses of small-scale farmers are lack of knowledge about modern markets, modern technology and proper use of modern inputs. Access to capital can be an obstacle for upgrading from production for direct consumption and local markets, rather than to more demanding markets. Working with small-scale farmers is difficult for trading and processing companies. Quantities of product are small and heterogeneous in quality, supply can be haphazard and bulking-up of volume into a steady stream of product of constant quality difficult to realize. These are serious problems for serving high-end modern supply chains. The organization of small-scale farmers is not easy in many cases. The culture of existing cooperatives and organizations may be an obstacle rather than an asset. Enterprises interested to step in and help with the organization of production and marketing face high transaction costs, and contract enforcement that is costly or even impossible. Risks of working with small-scale farmers can be high because of their ignorance and higher incidence of inappropriate application and use of illegal agrochemicals.

Without support from traders and processors small-scale farmers will rarely be able to overcome their weaknesses and participate in supply chains for high-end markets. Traders and processors will include small-scale farmers in coordinated supply chains only if they expect the benefits to outweigh costs (Box 1 has an example)<sup>2</sup>. Important factors are the perceived benefits, costs and risks.

The risks will depend on many factors. With extensive markets for cheap illegal pesticides and illegal antibiotics, the risks for uses of illegal pesticides and antibiotics by small-scale farmers are higher than in cases of effective public control. Government support for educating farmers in proper use of agrochemicals will also help in reducing risks. Risk of working with small-scale farmers on complex technologies will be relatively high. Given the potential risk with contract enforcement and loyalty, government culture matters. A culture of disrupting government interference in markets, debt forgiveness and weak contract enforcement will result in higher risks of working with small-scale farmers. Increased mutual trust between farmers and enterprises will reduce the perceived costs and, last but not least, good organization of farmers and effective leadership is a crucial factor in overcoming many of the weaknesses.

Benefits of working with small-scale producers in coordinated supply chains will be highest for labour-intensive products. An enterprise may achieve benefits of a coordinated supply chain through increased economies of scale in the market, since more volume of consistent quality may allow for better contracts with buyers. Experience in working with small-scale farmers is an important factor for success in enterprises that seek to link to such farmers. There is a need to develop suitable contractual relations and benefit sharing, with the aim to achieve loyalty and reduced costs in the supply chain. Farmers participating in coordinated supply chains receive better prices than they could obtain in open markets. Loyalty is a crucial variable for sustainability and will depend on higher prices that can be paid or on high shifting cost for farmers who want to divert to other buyers. Experience among farmers in working with enterprises can result in reduced transaction cost. This will always require well-organized groups with good leadership. Various activities at the local level can be much better performed through self-control by farmer groups, and through farmer leaders rather than by enterprise staff.

*Box 1. A rewarding pro-active strategy*

A Thai packing house that collected horticultural products from small-scale producers and delivered packaged products for export to an exporter, received strong signals in the late 1990s from buyers in the UK that it had to upgrade to the new retail standards, BRC and EUREPGAP. The company decided to pursue a pro-active and offensive strategy. The company acquired land on which to establish good agricultural practices. It upgraded all its facilities, introduced HACCP and ISO 9001 with external certification and was BRC-accredited in 2003. Its farm is EUREPGAP-accredited. It has heavily invested in the training of its staff. The company shortened the supply chain by exporting directly and leaving out the exporter. The company has long-term daily delivery schedules with buyers, which enabled the company to negotiate low airfreight rates.

In 2003, the company produced about 35 per cent of the value of its shipping on its own farms, but that share is declining. The rest it buys from small-scale farmers through a system of contract arrangements through brokers with farmers' groups and their individual members. The brokers provide technology and ensure compliance with delivery requirements. For vegetables, Good Agricultural Practices (GAPs) are prescribed, and growers receive training, seeds, pesticides and other inputs. The inputs are repaid in kind. Use of inputs and production are registered daily. The farmer groups have first responsibility to control compliance with GAP requirements themselves. Farmers receive prices 20 percent higher than in local markets. The number of contract farmers was about 900 at the end of 2003 and increasing. The company's sales increased from US\$3.3 million in 1999 to US\$8.5 million in 2003 and an estimated US\$11.5 million in 2004.

(Source: Interviews by Sompop Manarungsan and Kees van der Meer in May and November 2004)

Cost for investors in setting up and operating coordinated supply chains will be reduced if the investment climate is good – infrastructure, contract enforcement, public and commercial services – and if there is public support for high set-up costs for training and for the development of applied technology.

#### POSSIBLE POLICY INTERVENTIONS

Coordinated supply chains are commercial tools in competitive strategies. They are institutional arrangements that help the private sector, including farmers, to achieve net benefits that otherwise would not be available. Their creation depends on investment decisions, mainly by the chain leader, but also by farmers and others involved in the partnership. Once parties have invested, they have a joined interest. Breaking up a coordinated supply chain results in loss of capital. Hence, there is often loyalty and durability in partnerships that form coordinated supply chains. Needless to say, arrangements in a coordinated supply chain require a different culture from that prevalent in the transaction supply chains. Competition in the high-end markets is increasingly competition between (integrated and coordinated) supply chains rather than between individual enterprises. It is also competition between coordinated supply chains and small-scale farmers and commercial farmers.

Although coordinated supply chains are commercial arrangements in which the private sector must be in the driver's seat, there are a number of things the public sector can do to enhance their emergence and functioning. These things are related to the investment climate and involve public-goods aspects. Four fields for public intervention deserve to be mentioned. First, the government must provide adequate laws, regulation and enforcement necessary for doing business, in particular in food supply chains in which small-scale producers are involved. Important areas of attention are regulation of markets for pesticides and veterinary drugs. But also property rights and contract enforcement deserve attention. Second, there is a role for independent facilitators – honest brokers – to help in overcoming lack of experience and lack of trust among enterprises and farmers. This can be done by contributing well-documented information about arrangements and experiences that have worked elsewhere, and tailoring arrangements to specific needs.

A third area is the promotion of producers' organizations. In many countries legislation and regulation discourage the formation and development of independent producer organizations. Memories of failed policies that initiated or supported public-sector-dominated cooperatives contribute to negative attitudes among farmers and others about farmers' organizations. Subsidization and debt forgiveness schemes of the past have contributed to a wrong business culture among farmers. Governments must clearly break with policies of the past in order to give farmers a good chance as partners in coordinated supply chains. Support for independent producers' organizations, training of leadership and education about modern markets can be helpful. Fourth, support can be given for the development of good agricultural practice (GAP), good manufacturing practice, improved technology and training. Often it may be a good strategy to let the chain leader take the lead, since

the results are directly related to market success and provide some sharing in the cost.

#### FINAL REMARKS

The market served by coordinated and integrated supply chains is more visible than traditional markets, but in most countries it constitutes still a relatively small share of production, often a few percent only. It is the more profitable part of the agricultural sector and it caters for the export market of perishables and vulnerable processed products. It is also an emerging but small part of the modern domestic retail market. It gets a relatively large amount of attention given its modest share in production and the limited involvement of poor farmers and labourers.

Coordinated supply chains are spreading rapidly in high-end food markets. There is much concern whether small-scale farmers can participate in these relatively profitable parts of the food markets. There is evidence of successes from many parts of the world. Many of these successes occurred without or with little public support. But, there are also examples of exclusion; cases where small-scale farmers lost out in competition from large-scale competitors. Rapidly increasing requirements for food safety and quantities of consistent quality contribute much to rapid restructuring of supply chains. It is important to analyse and understand reasons for success and failure, and to design public intervention in cases where it is warranted.

Global food markets are characterized by economies of scale and scope, especially in logistics, marketing and technology. Small-scale farmers, even if they are well organized and not discriminated against, cannot be competitive in all products and markets. There is nothing wrong with that. In such cases large-scale enterprises can be competitive and in so operating generate on-farm and off-farm employment in serving high-end markets. However, in cases where the growth of large-scale companies is based on neglect or discrimination of small-scale farmers rather than on economies of scale there is a need to create a level playing ground. Small-scale producers may be in a weak position because of market failure or policy failure.

There are *market failures* that bear relatively heavily upon small-scale producers and that can put them in a disadvantageous position for participating in coordinated supply chains. Small-scale farmers are often poorly organized, and risks and transaction costs of involving them in coordinated supply chains are relatively high. Small-scale farmers are more affected by negative externalities of markets for agrochemicals and by problems of moral hazard than are larger scale farmers. Markets that provide small-scale farmers with information and technology are often incomplete and inefficient.

There may also be *policy failure*, which can put small-scale farmers in a weak position. An important policy failure is failing to mitigate problems of well-understood market failure. Failure to properly control markets for agrochemicals, for instance, negatively affects the competitiveness of small-scale farmers. Producer organizations have to play important roles in reducing transaction costs and risks of working with small-scale producers. However, inappropriate policies inhibit or



discourage their development. Support provided for development of independent producer organizations and applied technology is often insufficient. A culture of political interference in markets and poor contract enforcement increases the risk for enterprises of working with small-scale farmers.

This note provides a framework for understanding the rapid spread of coordinated supply chains and why small-scale farmers are included or excluded. It also provides arguments for policy intervention in cases where there is no level playing field for small-scale and large-scale producers because of market and policy failure. The World Bank's Agriculture Investment Sourcebook provides some guidance for work in this field (World Bank 2004). There is much need for more empirical research for better understanding of economies of scale and of market and policy failures in this domain, which includes a wide range of products, local situations and markets. Such analysis will help to better inform policy development and intervention in the diverse circumstances being faced by the World Bank's clients.

#### NOTES

<sup>1</sup>. This paper was orally presented at the workshop "Is there a place for Smallholder Producers in Coordinated Supply Chains?", World Bank, Washington, DC, December 8, 2004. The author benefited from helpful comments from Jock R. Anderson

<sup>2</sup>. Swinnen, in a World Bank study (Swinnen 2004) and other publications, documents many examples of successful coordinated supply chains between small-scale farmers and agribusinesses in former communist countries of Central and Eastern Europe

#### REFERENCES

- Baumann, P., 2000. *Equity and efficiency in contract farming schemes: the experience of agricultural tree crops*. Overseas Development Institute, London. Working Paper no. 139. [<http://www.odi.org.uk/publications/wp139.pdf>]
- China customs data*. China Customs Statistics Information Service.
- The China statistical yearbook*. China Statistics Press. Various issues.
- Diop, N. and Jaffee, S.F., 2005. Fruits and vegetables: global trade and competition in fresh and processed product markets. In: Aksoy, M.A. and Beghin, J.C. eds. *Global agricultural trade and developing countries*. World Bank, Washington, 237-257. Trade and Development Series. [<http://siteresources.worldbank.org/INTGAT/Resources/GATfulltext.pdf>]
- Eaton, C. and Shepherd, A.W., 2001. *Contract farming: partnerships for growth: a guide*. FAO, Rome. FAO Agricultural Services Bulletin no. 145. [<http://www.fao.org/ag/ags/AGSM/contract/cfmain.pdf>]
- Hallam, D., Liu, P., Lavers, G., et al., 2004. *The market for non-traditional agricultural exports*. FAO, Rome. FAO Commodities and Trade Technical Paper no. 3. [<http://www.fao.org/docrep/007/y5445e/y5445e00.HTM>]
- Reardon, T. and Berdegue, J.A., 2002. The rapid rise of supermarkets in Latin America: challenges and opportunities for development. *Development Policy Review*, 20 (4), 371-388. [<http://www.blackwell-synergy.com/doi/pdf/10.1111/1467-7679.00178>]
- Swinnen, J.F.M., 2004. *The dynamics of vertical coordination in ECA agrifood chains: implications for policy and bank operations: final report*. World Bank, Washington. Report no. 29457. [[http://www-wds.worldbank.org/servlet/WDS\\_IBank\\_Servlet?pcont=details&eid=000011823\\_200504111110737](http://www-wds.worldbank.org/servlet/WDS_IBank_Servlet?pcont=details&eid=000011823_200504111110737)]
- World Bank, 2004. *Agriculture investment sourcebook*. World Bank, Washington. [<http://www-esd.worldbank.org/ais/>]