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RESEARCH ON AGRI-FOOD SUPPLY CHAINS IN SOUTHERN AFRICA INVOLVING SMALL-SCALE FARMERS: CURRENT STATUS AND FUTURE POSSIBILITIES

G.F. Ortmann¹ and R.P. King²

ABSTRACT

The main objective of this article is to review the research by agricultural economists over the past decade on linking smallholder farmers to agri-food supply chains in Southern Africa, and to consider international and local urban trends in the development of such supply chains. The research reviewed covers the constraints placed by transaction costs on access by smallholder farmers to input and product markets; the potential role of contracting in linking smallholders to agribusiness firms; linking smallholders to supermarkets; equity-share schemes; the role of trust in a business relationship; promoting investment in smallholder agriculture by developing rental markets in communal areas; and the role of collective action (e.g., the formation of cooperatives, investor-owned firms or trusts) in promoting access to input and product markets. The development of alternative food networks in urban areas, which face a growing influx of poor people, could provide opportunities for smallholders, as individuals or groups, to supply the communities with the products and services they desire.

Keywords: agri-food supply chains, alternative food networks, small-scale farmers

1 INTRODUCTION

Research on how small-scale (smallholder) farmers in Southern Africa can successfully participate in food supply chains has gained momentum in recent years. This is evident from the number of peer-reviewed articles on the subject published in the past decade in *Agrekon*: between 2000 and 2009, no less than 31 articles dealing with smallholder farmer involvement in agri-food supply chains in Southern Africa were published in this journal.

Why has this research become so topical? The South African (SA) government, through the Department of Agriculture, Forestry and Fisheries, the various provincial departments of agriculture and the Agricultural Research Council (ARC), has paid greater attention through research and extension efforts relating to the promotion of food security to smallholder farms and the growth of emerging small-scale farmers. Non-governmental organisations (NGOs) and researchers at



universities have also invested considerable resources in investigating practical ways of linking smallholder farmers to mainstream agri-food supply chains such as supermarkets. Small-scale farmers in South Africa, as in other developing countries, face challenges in that they have limited access to factors of production, credit and information, and markets are often constrained by inadequate property rights and high transaction costs (Delgado, 1999; Matungul *et al.*, 2001; Abdulai & Birachi, 2008). High transaction costs – including the costs of information and those associated with the search for trade partners, the distance to formal markets and contract enforcement – are detrimental to the efficient operation of markets for inputs and products (Williamson, 1985). Nevertheless, since the smallholder sector in South Africa is considered to be important in terms of providing employment, human welfare and political stability (Delgado, 1999), the critical issue is how these smallholders can improve their competitiveness by participating profitably and sustainably in agri-food supply chains. The main aim of this article is to review research conducted in South and Southern Africa (with a focus on South Africa) over the past decade on how to effectively link smallholder farmers with various agri-food supply chains. A review of international and local urban trends in alternative agri-food supply chains will also inform the debate on this issue.

The next section of this article briefly defines the characteristics of smallholder farmers and households in South Africa, emphasising the production and marketing challenges they face. This is followed in section 3 by a brief review of the economic theory on supply chains. Section 4 reviews the literature on the research conducted by agricultural economists in South Africa over the past decade with the aim of promoting the participation of smallholders in agri-food supply chains. Section 5 describes trends in the development of agri-food supply chains internationally and in urban areas of South Africa. The article concludes with a brief summary and some suggestions for future research on smallholder participation in agri-food supply chains in South Africa.

2 CHARACTERISTICS OF SMALLHOLDER FARMERS AND HOUSEHOLDS IN SOUTH AFRICA

The characteristics of smallholder farmers and households in South Africa have been described by a number of authors, including Matungul *et al.* (2001) and Thomson (1996). Matungul *et al.* (2001), for example, investigated typical smallholder household characteristics in Impendle and Swayimana, two rural areas of KwaZulu-Natal. They reported the average size of sample households over both study areas to be 6.7 members. Allocated plots of arable land were quite small, averaging 1.1 hectares in Impendle and 1.8 hectares in Swayimana. The responsibility for land allocation lies with the tribal authority; consequently, no household can claim formal ownership of the allocated piece of land. There is,

therefore, no market for arable land under the existing (communal) land tenure system. Although the majority of household heads in both areas were male, marketing of agricultural products and other related activities were undertaken mainly by female members of the households. Extension officers visited households roughly once a year. Education levels of respondents were generally low (mean of 5.2 years), and only 36 per cent of all respondents spoke English (32.5 per cent both spoke and wrote English). Respondents in both areas therefore faced high transaction costs in marketing their products outside of their own areas. Households usually included two or more extended family members and some adult members away on wage employment. Household income was derived mainly from off-farm sources (e.g., welfare payments and wage remittances). Physical infrastructure (roads, telecommunications and transport) in both regions was poorly developed, and the institutional environment (communication skills, contract enforcement) in the two regions was also weak. Respondents generally lacked market information.

Households in other communal areas of South Africa display similar characteristics. In general, smallholder farmers in South Africa have limited access to factors of production, credit and information, and face high transaction costs in input and product markets. Also, the benefits of technology, information and market participation are severely constrained by small farm sizes (Delgado, 1999; Matungul *et al.*, 2001).

3 ECONOMIC THEORY ON SUPPLY CHAIN STRUCTURE AND SIZE

Economic theories of vertical and horizontal integration and coordination, and optimal ownership help identify factors that influence the structure, size and scope of supply chains. Williamson's (1975, 1985) work on transaction cost economics is useful for understanding supply chain structure, in particular whether, from the perspective of a particular set of stakeholders, transactions along a supply chain are best governed by market relationships between distinct firms or are internalised within a single firm. Vertical integration (or coordination) can be a response to high transaction costs, especially those associated with hold-up problems related to asset specificity and lock-in. Smallholder households often face hold-up problems. However, they rarely have the resources to overcome these problems through vertical integration, which would internalise distribution and retail activities that are now performed by independent firms in the predominant retail channels for most food products. Although vertical integration makes it possible to capture a larger share of final consumer expenditure, it may come at a cost, since the optimal scale for some activities may be much larger than can be achieved by a single producer or even a group of small producers. This makes it

difficult for smallholder-owned organisations to compete with larger, vertically integrated firms at the retail end of the supply chain.

Williamson's work also suggests that stable, long-term relationships with trading partners or service providers are another structural response to asset specificity. In such relationships, trading partners are willing to forgo short run price opportunities offered by other firms and may base transaction prices on shared perceptions of long-term production costs rather than on competitive market prices. They do this because they derive significant benefits – either enhanced product differentiation or significant logistics or transaction cost savings – from their long-term association. Smallholder households could benefit from stable, long-term trading partner relationships, but the lack of secure property rights, especially in terms of land, makes it difficult for them to establish such relationships.

Building on the work of Williamson and on property rights theories developed by Hart (1995), Hansmann (1996) argues that economic activities will tend toward organisational structures that minimise the combination of contracting costs and ownership costs and that ownership will be concentrated in segments of a supply chain that make unique contributions to value creation. Hansmann argues that producer marketing cooperatives, for example, are most likely to form when farmers acting independently are subject to monopsony power from a single buyer – such as a processor or wholesale distributor – and when the costs of collective decision making are reduced by physical proximity, shared values, and common interests. These conditions may be met for smallholder households that are selling food products to consumers in urban areas.

4 REVIEW OF PAST RESEARCH ON AGRI-FOOD SUPPLY CHAINS INVOLVING SMALLHOLDERS IN SOUTHERN AFRICA

In his presidential address at the 2001 Agricultural Economics Association of South Africa (AEASA) conference, Ortmann (2001) presented some thoughts on the industrialisation of agriculture and the role of supply chains in promoting the competitiveness of, in particular, agri-food supply chains in South Africa. Part of his paper focused on the difficulties faced by small-scale farmers in participating profitably and sustainably in such supply chains. The importance of developing the “right” institutions to promote the competitiveness of both commercial and small-scale farmers and agri-food supply chains had also been the focus of his 2000 AEASA presidential address (Ortmann, 2000). In his FR Tomlinson Lecture in 2001, Vink (2001) provided a comprehensive review of small-farmer research in South Africa, including some research on marketing, institutional and infrastructure problems faced by smallholders. Darroch (2001) also states that creative solutions are needed to viably integrate communities previously denied access to economic

opportunities into existing and new supply chains. Various studies focusing on different aspects of smallholder links with agri-food supply chains in Southern Africa can be roughly grouped according to the following themes (although it is recognised that the issues involved are interrelated).

4.1 Effect of transaction costs

Anseeuw *et al.* (2000) reported on a case study they conducted in 1997 of informal cut flower street-sellers in Pretoria. The main problems facing the sellers related to the quality and reputation of the flowers, a weak support infrastructure and a constrained capacity (in terms of knowledge and lack of collective action) to sustain their businesses. These authors suggested a number of strategies for improving the potential success of the street-sellers. A study by de Bruyn *et al.* (2001) on how transaction costs influenced cattle marketing decisions in the northern communal areas of Namibia showed that a number of transaction cost variables (herd size, distance from auction points, information and risk) had a significant effect on the proportion of meat sold to Meatco (a government-owned parastatal), and thus indirectly on the choice of marketing channels.

Matungul *et al.* (2001) attempted to identify market constraints faced by a random sample of 120 small-scale farmers (households) in the KwaZulu-Natal midlands. Their study supports the hypothesis that transaction costs are a primary determinant of household crop income; in other words, households facing lower transaction costs generate higher levels of crop income. They contend that, in addition to public investments in improved physical infrastructure (e.g. roads and telecommunications), institutional infrastructure (e.g., land rental markets, marketing associations and contract enforcement) is critical for lowering household transaction costs, which could stimulate smallholder production and marketing activities. They argue that the government has an essential role to play in establishing an institutional framework (rules and constraints) for creating sustainable marketing systems and that government could bear some of the costs of coordinating collective action. Group action by smallholders could strengthen their bargaining power, facilitate finding institutional solutions to problems of coordination and public service provision, compensate for missing markets and reduce transaction costs.

Masuku *et al.* (2001), in their study to identify factors influencing the decision whether or not to sell maize and the choice of marketing chain by smallholder farmers in Swaziland, found that the decision whether or not to sell maize was influenced by income from off-farm activities, past experience with the marketing channel, access to agricultural information, participation in agricultural schemes, education of household members, and farm size. The choice of marketing channel was affected by transport costs and farm size.

Wynne and Lyne (2004) analysed survey data gathered from small and large poultry producers in the rural areas of KwaZulu-Natal, and highlighted factors constraining the impact of commercial poultry production on the local economy. They concluded that alleviating constraints for a large number of small-scale enterprises should have a more positive effect on the rural economy than encouraging a few larger enterprises to grow bigger. Small-scale producers face much higher transaction costs than larger producers, and the authors recommend that government policies should focus on absorbing some of these transaction costs to nurture economic growth, for instance by improving education, physical infrastructure and technology transfer through extension. Other important interventions are mentoring and training services for new managers, including institutional, legal and financial management instruction.

Results of a study by Randela *et al.* (2008) to identify factors significantly influencing the degree of market participation of 177 small-scale cotton farmers in Mpumalanga support the hypothesis that transaction costs rank among the main determinants of commercialisation; this bears out the conclusions arrived at by Matungul *et al.* (2001). Variables that were statistically significant included age, ability to speak or understand English, region, ownership of transport, access to market information, distance to market, dependency ratio, trust, land size and ownership of livestock. Uchezuba *et al.* (2009) contend that the profitability and sustainability of livestock farming among the rural poor in the Northern Cape are constrained by low returns on investment caused by a number of factors. Their results showed that farming experience, extension visits and infrastructure greatly increased the likelihood of small-scale farmers marketing their animals commercially (to mainstream markets). However, household size, distance to the nearest market and outstanding debts had a negative impact. The authors recommend that policies should be targeted at improving the marketing infrastructure, and that farmers should be encouraged to form commodity groups and cooperatives, which would allow them to market in groups and in that way reduce transaction costs.

4.2 Role of contracting

Contract farming may help to reduce transaction costs. Kirsten and Sartorius (2002) report on the potential role for contract farming in linking agribusiness and small-scale farmers in developing regions. They also highlight problems usually associated with contract farming, including difficulties in enforcing contracts; high transaction costs in dealing with many small-scale farmers; difficulties in meeting strict quality and food safety standards; high rate of product rejection by agribusiness firms; and the weak bargaining position of farmers. Ortmann (2005) mentions that small-scale sugarcane farmers in South Africa

have contractual agreements with sugar millers, who absorb or subsidise the transaction costs involved in dealing with many small-scale growers. Ginners in Southern Africa provide small-scale cotton farmers with technical information and buy their product at a negotiated price, which has contributed to the success of some farmers. A similar contractual arrangement by SA forestry companies has established thousands of small-scale timber growers in KwaZulu-Natal (Ortmann, 2005). These contracts have promoted household incomes and economic growth in rural areas.

Sartorius and Kirsten (2002) report on a fresh approach to the design of agribusiness smallholder contracting linkages in South Africa, combining a case study in the timber industry with lessons from history and the economics of organisational architecture. They conclude that small-scale farmers generate incremental transaction costs and that medium and small-scale farmers can compete with larger timber growers in the supply chain. However, the results were inconclusive with regard to the role of contracting as a means of overcoming the barriers to entry into the timber industry. They developed various proposals aimed at reducing transaction costs and achieving higher levels of contract enforcement in smallholder contracting arrangements with agribusiness, and concluded that many small-scale farmers can be effectively incorporated in the timber supply chain, but only if specific measures are taken to reduce transaction costs.

As part of the supply chain for sugar in South Africa, small-scale sugarcane producers rely mostly on sugarcane contractors to deliver their crop to the sugar mill. Nothard *et al.* (2005) examined those attributes of small-scale sugarcane contractors that affect their quality of service as perceived by small-scale sugarcane growers (SSGs). Interviews were conducted relating to contractor service quality (transport and general service timeliness, meeting of daily rateable delivery requirements, low downtimes, good staff management, and minimal disagreements on service terms). Results showed that factors relating to a contractor's perceived service quality included gender, training, the quality of information used and the sugarcane tonnage transported (size of business). Being a male contractor and having a larger business positively influenced service rating as perceived by SSGs. The authors emphasise that the quality of information used and increased training levels highlight the need for the continual provision of relevant information and training for sugarcane contractors by extension services.

In an overview of contracting arrangements in agribusiness procurement practices in South Africa, Vermeulen *et al.* (2008) found that a wide range of institutions were used to obtain raw commodities for the SA agro-processing sector. Companies are increasingly utilising contractual arrangements instead of the open market as a source of supply for raw commodities. For example, the main findings indicated that nearly 80 per cent of the total volume of fruit and vegetables

procured by SA agribusiness companies for processing was based on some form of contracting arrangement. The balance was acquired through a combination of the open market, own estates, agents and imports. The procurement of meat, poultry and eggs favoured vertical integration, medium- to long-term contracts and long-term “informal” supply arrangements with selected groups of farmers. These findings may have important implications for smallholders in South Africa who seek markets for their produce. They suggest that contracting arrangements with marketers and processors may be a strategy that could facilitate access to markets if transaction costs could be reduced and the quality requirements satisfied.

4.3 Link to supermarkets

According to Louw *et al.* (2008), supermarkets and fast food chains have become important players in the SA food system because of increasing urbanisation (approaching 60 per cent of the total population), and a growing middle class. Where real per capita disposable incomes increase, urbanisation leads to different consumption patterns and growing preferences for quality and easy-to-prepare foods. It is under circumstances of a rising, concentrated urban market demand and growing real incomes that supermarkets and fast food chains can thrive.

The increasing importance of supermarket chains in the SA food system has led to increased vertical integration and consolidation in the sector, with increased use of market contracts, strategic alliances and franchises (Louw *et al.*, 2008). For example, procurement practices and policies, especially with regard to fresh fruit and vegetables, have been systematically modified by circumventing spot markets (such as municipal fresh produce markets) in favour of sourcing via procurement specialists (sometimes in-house companies) who buy primarily from a limited number of preferred producers able to ensure supply of products of consistent quality, food safety and volume. Large agro-processors, who benefit from the increased demand for processed foods, have also followed this procurement trend. These changing practices are driven by various economic factors (eg reducing transaction costs and increasing efficiency in the supply chain) and non-economic factors (e.g., establishing long-term trust-based relationships with suppliers and satisfying requirements for food quality, safety standards and ethical trade). Managing these factors effectively could result in competitive advantage for a particular supermarket chain.

The stringent requirements of supermarkets regarding product quality, safety, volume and consistent supply make it difficult for smallholders to supply them (Louw *et al.*, 2008). D’Haese and Van Huylenbroeck (2005) report in this context that following the opening of supermarkets in two villages in the former Transkei, local shops and farmers’ markets were unable to compete with the lower food prices offered by the supermarkets. Clearly, as supermarkets increase their food

market share, marketing opportunities for smallholders producing fresh fruit and vegetables are greatly affected (Louw *et al.*, 2008). Hence, the question remains: how can small-scale farmers gain access to formal food supply chains?

Louw *et al.* (2008) refer to numerous studies in other developing countries or regions that demonstrate how smallholders have gained access to, or have been excluded from, formal food systems (see Ghezan *et al.*, 2002; Reardon & Berdeque, 2002; Reardon *et al.* 2003; Weatherspoon & Reardon, 2003). Agro-processors, for example, are using various forms of growing contracts (often formal written contracts) with producers. Louw *et al.* (2008) present some case studies on how small-scale farmers have been linked with agro-processors and supermarkets and how the challenges posed by the changing food system could possibly be overcome. For example, smallholders in Limpopo supply on average, an estimated 60 per cent of a large processor's factory requirements for tomatoes. When these farmers have formal contracts (which is the exception), these are mostly growing contracts based on a certain tonnage. However, direct competition from hawkers, who often offer higher prices, has resulted in an unsteady supply from the contracted farmers in recent years.

Another large tomato processor with a factory in northern Limpopo has growing contracts with 121 small-scale tomato producers supplying 25 000 tons of fresh tomatoes per year. The contracts enable the producers to obtain production credit for inputs, with the exception of seedlings, from commercial banks. Two other case studies involved two retail stores, also in Limpopo, that serve mainly low-income rural consumers. Because of their remote location relative to the main distribution centres and fresh produce markets, these stores have attempted to integrate some local smallholder producers into their supply base. For example, at the time of the study, one store had 14 smallholders delivering mainly spinach and cabbage on a consistent basis, representing between 10 and 20 per cent of the store's fresh produce requirements. This store did not provide any loans or technical assistance to the producers. The other store had about 12 smallholders as preferred producers who supplied most of the store's requirements in terms of various fresh vegetables. In this case the owner and fresh produce manager's knowledge of farming was important in building and maintaining a stable relationship with the producers. In addition to providing technical assistance, the store had a flexible, interest-free production loan system for the producers (Louw *et al.*, 2008).

Emongor and Kirsten (2009) point out that supermarkets have expanded rapidly in the SADC (Southern African Development Community) countries during the past decade, leading to concerns that small-scale farmers and food processors could be excluded from access to urban markets. They conducted a survey in Botswana, Namibia and Zambia in 2004, 2005 and 2007 to evaluate the impact of supermarkets on various participants in the supply chain. Their results

indicated that over 80 per cent of all processed food products in the three countries were imported from South Africa, and that supermarkets used a combination of procurement systems for fresh fruit and vegetables and processed food products. Participation in the supermarket supply chains enhanced small-scale farmers' incomes. The expansion of SA supermarkets into the SADC countries may, therefore, benefit smallholder farmers if they can be incorporated successfully into the supermarkets' fresh fruit and vegetable supply chains. The case studies provided by Louw *et al.* (2008) provide some ideas as to how this may be done.

Louw *et al.* (2008) present a useful analysis of alternative market options for smallholder farmers. These farmers may explore five market channels, namely supermarkets, agro-processors (which together are classified under "contractual arrangements"), national fresh produce markets, greengrocers and informal markets (e.g., hawkers) (the last three are classified under "spot mechanisms"). Ease of entry increases from contractual arrangements to spot markets. Producer organisations (collective action) could reduce transaction costs and promote smallholder competitiveness. The benefits of public-private partnerships between government, the private sector and smallholder farmers through, for example, participatory research, information dissemination and capacity building (training) are also highlighted. Furthermore, access to land, labour and the ability to mitigate risk are important in complementing correction of marketing constraints.

4.4 Equity-share schemes

Louw *et al.* (2008) also present a case study involving an equity-share scheme in the Western Cape. Such schemes enable farm workers to become co-owners of a successful commercial farm or agribusiness and could satisfy AgriBEE requirements. However, establishing an equity-share scheme "is complicated and time-consuming. It requires political will, partnerships, capital, know-how and patience. However, if based on sound business principles it is likely to be more viable and sustainable in the long term – unlike many land reform projects in the past" (Louw *et al.*, 2008, p.303). Such schemes have the potential to link farm workers effectively with mainstream supply chains. Other analyses of equity-share schemes are presented by Knight and Lyne (2002), Knight *et al.* (2003), Gray *et al.* (2004; 2005) and Karaan (2009).

4.5 Role of trust

Masuku *et al.* (2003) analysed a model of relationships between smallholder sugarcane growers and millers in the Swaziland sugar industry supply chain. In particular, they identified the behavioural factors contributing to the perceived level of satisfaction of sugarcane growers in their relationship with millers. Their results suggest that higher levels of trust lead to greater cooperation, which, in

turn, leads to higher levels of commitment on the part of the smallholder growers to the business relationship. They conclude that a relationship founded on trust and mutual respect is more likely to succeed than a relationship of convenience supported by legal contingencies. Further studies by Masuku and Kirsten (2004) and Masuku *et al.* (2007) on the same industry came to a similar conclusion.

With regard to improving working relationships between stakeholders in a supply chain, Darroch and Mushayanyama (2006a) surveyed 48 fully certified organic farmer members of the Ezemvelo Farmers' Organisation in KwaZulu-Natal to assess their perceived levels of satisfaction, trust, cooperation and commitment in a formal supply chain producing *amadumbe* (a tuber traditionally eaten as a vegetable), potatoes and sweet potatoes for a major national supermarket chain. Results of empirical recursive models suggest that a high level of satisfaction in the working relationship leads to these farmers trusting the pack-house agent more, and that high levels of trust in turn lead to higher levels of commitment to, and cooperation in, the supply chain (see also Darroch and Mushayanyama, 2006b).

4.6 Promoting investment in agriculture

Asfaha and Jooste (2006) point out that rural-urban migration occurs where there is economic disparity between rural and urban areas. Some economists therefore argue that improving agricultural productivity and/or income could reduce the incidence of some economic problems attributable to rural-urban migration. Asfaha and Jooste (2006) used a recursive equation system and a SA data set for the period 1965 to 2002 to measure the indirect agricultural input elasticity of rural-urban migration. Their results suggest that narrowing the urban-rural income differentials can reduce rural-urban migration and high urban unemployment in South Africa. They further show that developing agricultural land and infrastructure and increasing fertilizer use can enhance agricultural income and reduce rural-urban migration (and, therefore, urban unemployment). In this context, Pauw's (2007) analysis of agriculture and poverty in South Africa reveals high poverty rates and low incomes among black subsistence and small-scale farmer households. His results also suggest that commercialisation is crucial if agriculture is to contribute meaningfully to poverty reduction among rural households. This implies that smallholder access to food supply chains could enhance their income.

With regard to commercialisation, Mahabile *et al.* (2005) report on an empirical analysis of factors influencing the productivity of livestock in southern Botswana. They showed that (1) respondents with secure land tenure (private farms) and larger herds use more agricultural credit than farmers who rely on open-access grazing to raise cattle; (2) secure tenure and higher levels of liquidity from long-term credit and off-farm wage remittances promote investment in fixed improvements; (3) expenditure on operating inputs is supported by liquidity from short-term credit

and wage remittances; and (4) herd productivity increases with greater investment in operating inputs and fixed improvements, and is thus positively (but indirectly) influenced by secure land tenure. Thus, secure land tenure is considered to be a major factor in promoting investment in, and productivity of, land in developing regions.

Dengu and Lyne (2007) maintain that an efficient rental market for cropland is a significant determinant of agricultural investment in the communal areas of KwaZulu-Natal. However, the efficiency of a rental market is compromised by the presence of transaction costs that reduce returns for both lessees and lessors. Their results confirm that tenants invest more when they contract with friends or family, and if their contracts are formally witnessed by a credible third party. Thus, any interventions that reduce potential losses caused by a breach of contract are expected to promote market efficiency and investment in crop production. They suggest that in the short run, the Provincial Department of Agriculture should sanction rental contracts negotiated by lessors and lessees. Ultimately, however, legal reform that leads to predictable contract enforcement in the communal areas is required to improve market efficiency and levels of investment in agriculture (see also Lyne, 2009).

4.7 Collective action

Lyne and Collins (2008) point out that agricultural cooperatives are often viewed as appropriate vehicles to facilitate vertical coordination with, or horizontal integration between, smallholder farmers who would otherwise be excluded from mainstream supply chains. In South Africa, renewed interest in development-oriented cooperatives saw the introduction of a new Co-operatives Act in 2005, along with support measures dedicated to emerging cooperatives. Ortmann and King (2007) investigated whether agricultural cooperatives have the capacity to facilitate smallholder farmer access to input and product markets in South Africa. They considered smallholders in two case study communal areas of KwaZulu-Natal who faced high transaction costs, as reflected primarily in their low levels of education and literacy, lack of market information, insecure property rights, poor road and communication infrastructure, and long distances to markets. These farmers had the potential to grow high-value crops such as vegetables, fruit and cut flowers. Analysis of the reasons why cooperatives were originally established in various parts of the world suggested that most of the causes (such as poverty, market failure and high transaction costs) also applied to the farmers who participated in the study. The authors maintain that in the supply chain from farm to market, the optimum boundary for each organisation involved in the chain (e.g., cooperative and investor-oriented firms) depends on the minimum operational and transaction costs for each business. Lyne and Collins (2008), however, contend

that the architects of the new Co-operatives Act discounted important trends in international legislation that would have made development-oriented cooperatives more versatile and given their members better access to capital and expertise through equity partnerships with private agribusiness firms. They conclude that the new Act should be amended to admit non-patron investors as members, and to allow for non-redeemable and hence appreciable and tradable shares. Such innovations are emerging internationally, usually with a cap on non-patron voting power.

As a follow-up to the research into the role of smallholder cooperatives in rural development, Chibanda *et al.* (2009) evaluated the impact of institutional and governance factors on the performance of ten smallholder agricultural cooperatives in KwaZulu-Natal. The results of a cluster analysis suggested that the performance of these cooperatives was influenced by institutional and governance problems. Institutional problems gave rise to low levels of equity and debt capital, reliance on government funding, low levels of investment, and subsequent loss of members. Governance problems were closely linked to the absence of a secret ballot, low levels of education, lack of production and management skills training, weak marketing arrangements and consequent low returns to members as patrons or investors. They concluded that appropriate institutional arrangements and good governance are important to the performance of enterprises initiated by groups of smallholders. They also argued that South Africa's new Co-operatives Act prevents smallholder cooperatives from adopting good institutional arrangements. Alternative ownership structures such as close corporations and private companies may offer better institutional arrangements and opportunities for collective action (see also Nganwa *et al.*, 2010).

The above review reveals wide interest on the part of agricultural economists in various aspects of promoting smallholder access to mainstream supply chains in Southern Africa. Whether this research and the associated recommendations have positively promoted, or are promoting, smallholder access to supply chains through institutional innovations and/or the direction of government policy measures is not clear, and needs further investigation. Recent international and local urban trends in agri-food supply chains (networks), which could inform the local debate on these issues and future research agendas, are discussed in the next section.

5 SOME RECENT INTERNATIONAL AND LOCAL URBAN TRENDS IN AGRIFOOD NETWORKS

Over time, conventional or mainstream agri-food supply chains have come to be characterised by greater vertical integration and coordination among players in the supply chain in efforts to promote economic efficiency (by reducing transaction, operating and marketing costs) and satisfying consumer demands for quality, safety,

convenience and cheaper foods. In the past decade or so, alternative food networks (AFNs) have evolved in developed countries (mainly in Europe and North America) in response to demands from concerned consumers for foods that are grown organically; are perceived as having been produced in an environmentally friendly, sustainable and ethical way; are regarded as healthier; support local producers; and can be traced to specific places (see Weatherell *et al.*, 2003). Ilbery and Maye (2005, p.823) point out that alternative food systems include farmers' markets, farm shops, box schemes, community supported agriculture and home deliveries, which are "in some ways different from conventional chains (particularly supermarket outlets)." Interestingly, geographers and rural sociologists have conducted and published a considerable amount of research on AFNs (see, for example, Hinrichs, 2000, 2003; Allen *et al.*, 2003; Renting *et al.*, 2003; Weatherell *et al.*, 2003; Winter, 2003; Ilbery & Maye, 2005, 2006; Morgan *et al.*, 2006). They have focused on different facets of AFNs, such as "short food supply chains", "local food supply systems", "culturally-embedded food systems", "direct farm retail", "community-supported agriculture", and "hybrid" food networks that include "alternative" and "conventional" elements (Abrahams, 2007, p.95).

In the United States (US) the Economic Research Service (ERS) of the United States Department of Agriculture (USDA) initiated a research project in 2008 to investigate the economics of US local food markets, about which, it contends, little is actually known. Also, there is no consensus on what is meant by "local". Hand and Martinez (2010) provide an insightful overview of various definitions of "local", and conclude that "no single definition can adequately capture the diverse demands that are reflected by support for local foods." Nonetheless, "locally grown" food, although accounting for a small share of total US food sales, is one of the fastest growing sectors in US agriculture. For example, the number of farmers' markets, which are considered to be an important component of "local" food sales, increased by nearly 150 per cent between 1994 and 2006 (ERS, 2008). As in Europe and Britain, in the US interest in "local" foods stems from various potential benefits, including environmental, health, food safety, and rural development (ERS, 2008). However, there may also be tradeoffs in the growth of local food markets. The conventional food system provides a wide variety of convenient, year-round, and relatively inexpensive products. Another area of research in the US has been how to grow the "middle" or family farm, which has been losing market share to large corporations (Lyson *et al.*, 2008).

To what extent is the growth of AFNs in developed countries mirrored in developing countries? In South Africa, for example, anecdotal evidence suggests that farmers' markets have been established in many urban areas and have become popular shopping destinations for many consumers, many of them middle class. Abrahams (2007, p.97) contends that AFNs in developing regions (the "south")

are fundamentally different from AFNs in developed countries and argues that the former AFNs have emerged because of the inability of communities to access conventional food supply systems (such as supermarkets). Thus, the emphasis is on factors relating to poverty, food security and cultural diversity rather than “the celebration of alternative consumption”, which is the focus of the literature on AFNs in developed countries. However, Abrahams (2007) argues that studies of AFNs in developing regions also have relevance for agri-food studies investigating urban poverty and cultural diversity in developed countries.

As part of an ongoing investigation into urban food supply systems in developing regions, Abrahams (2007) reports on her study conducted from 2004 to 2005 in Lenasia, a township community in the south-west of Johannesburg that is home to a growing informal settlement population. She conducted interviews with peri-urban farmers, vendors and consumers and reports that, although there was a supermarket complex within close driving distance that sold fresh vegetables and pre-packed chicken meat at a much lower price than live chickens, the supermarket was generally inaccessible to those without private transport. However, numerous fruit and vegetable vendors in the township’s main trading area made fresh produce (that they sourced from surrounding farms or the Johannesburg Fresh Produce Market) “more accessible to the majority of the community” (Abrahams, 2007, p.99). Other food products were sold directly by farmers (for instance at makeshift market stalls, and car boot sales). These local (traditional) food distribution systems provided a valuable service for poor people by providing them with a variety of foodstuffs that they preferred, “even though the food may not always be cheaper or safer” (Abrahams, 2007, p.102).

Interestingly, although many of the peri-urban farmers did not have the capacity to enter formal retail supply chains, there were other farmers who had grown their businesses and potentially had access to formal markets because of the quantity and quality of the products they produced, but chose not to, preferring instead to supply the local markets (Abrahams, 2007). Face-to-face interaction between farmers and consumers was typical, and trust played an important role in this mutually beneficial relationship. Producers who are able to communicate with consumers in their language have an added advantage, and this helps to build trust. In urban areas or townships where certain religious groups predominate (for instance, Indians who practise the Islamic faith), networks of speciality foods (such as Halaal) have evolved. Often these foods are not available in supermarkets. Thus, “traditional food networks are not only strongly visible and accessible because of consumer food choice”; another driving factor is the religious sanctioning of foodstuffs (Abrahams, 2007, p.103).

AFNs for the urban poor are an important aspect of food supply in developing areas, even though cultural food supply systems are dominant. Abrahams (2007,

p.104) maintains that while supermarkets provide cheaper food, “the urban poor (mainly from informal settlements and low-income areas) do not have refrigeration facilities to store fresh food and meat products nor do they own private vehicles with which to transport large quantities of foodstuff.” Hence, most of the food items will be obtained through AFNs (e.g., live chickens from surrounding farms or from vendors). It is important to note that AFNs for poultry, for example, are different from the free range/quality/organic AFNs in developed countries for two main reasons: first, the type of product is not available in the mainstream (conventional) food supply system, and second, although these consumers pay more for the product, it is sometimes of inferior quality.

In view of the important and mutually beneficial role that AFNs are playing in developing (urban) regions of South Africa for both participating producers and consumers, it could be argued that if demand for these products and services is growing, more smallholder farmers could potentially become involved in these AFNs. The economic feasibility of such a venture may be enhanced if smallholders integrated horizontally by forming producer groups such as cooperatives, companies or trusts in order to reduce transaction and marketing costs (see Ortmann and King, 2007; Lyne and Collins, 2008). With increasing urbanisation and potentially a greater number of poor people, these AFNs are expected to continue to provide desired products and services in future. Smallholder farmers, as individuals or as groups, could potentially play an important role in this. Integration into AFNs could be seen as complementary to the integration of smallholders as individuals or groups into mainstream food supply chains dominated by supermarkets.

6 CONCLUSION

The main objective of this article was to review the research that has been conducted by agricultural economists on linking smallholder farmers to agri-food supply chains in South (and Southern) Africa, and to review international and local urban trends in the development of these supply chains. Economic theories of vertical and horizontal integration and coordination, and optimal ownership assist in identifying factors that influence the structure, size and scope of supply chains. Williamson’s work in this area, and particularly on the effects of transaction costs, has been seminal.

Research on linking smallholders to agri-food supply chains in Southern Africa has covered a number of key (albeit interrelated) areas. This is important research, but some questions need to be asked: has this research promoted any institutional changes or innovations that have sustainably improved smallholder links to agribusiness supply chains? Has this research led to a change in the thinking of government policy makers on supporting such institutional innovations? Could international trends in alternative agri-food supply chains inform the local debate?

Answers to these questions are currently ambiguous and further investigation is required to shed some light on these issues.

Although mainstream supply chains (such as supermarkets) dominate local and international food markets, alternative food networks have evolved in developed countries in response to demands by concerned consumers for foods that are perceived to be safe and sustainably and ethically produced. In South Africa, where this trend is also evolving among certain consumers, an important issue is the development of alternative food networks in growing urban areas that are characterised by poverty, food insecurity and cultural diversity. Often these communities are unable to access conventional (mainstream) food supply systems such as supermarkets because of a lack of transport and refrigeration, and cultural or religious prescriptions. There appears to be potential for smallholder farmers, as individuals or groups, to supply these communities with the products and services they desire. It is recommended that more research should be directed towards urban food supply systems, how these can be made more efficient, and the potential role of smallholder farmers in them.

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