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# **Cooperatives: Issues and trends in developing countries**

**Report of a workshop, held in Perth, 24–25 March 2003**

*Editor:* Ray Trewin

Australian Centre for International Agricultural Research  
Canberra 2004

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# Preface

This report is the outcome of a workshop held in Perth in early 2003.

A number of developing countries have shown interest in cooperatives as a way for smallholders to obtain some market power, especially where old institutions have disappeared or are losing their relevance. Cooperatives have a long history in developed countries and have evolved to changing market environments.

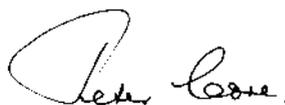
The purpose of the workshop was to cover the broad range of issues and trends associated with cooperatives, drawing on relevant experiences of developing and developed countries.

ACIAR is publishing this report so that a wider audience, both in developing countries and in Australia, is aware of the issues associated with cooperatives. The report is also available to download from our website: [www.aciar.gov.au](http://www.aciar.gov.au).

It is hoped that some research partnerships may evolve from this work, as has been the case with similar 'issues' workshops, such as one on water policy.

ACIAR has supported a number of research projects covering cooperatives defined broadly. The Agricultural Development Policy Program, which funded this workshop, has projects on microfinance, contract farming and marketing institutions, some of which were represented at the workshop. The issues are relevant to other programs and researchers from ACIAR's Agricultural Systems Economics and Management Program were also involved in the workshop.

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*Peter Core*  
*Director*

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# Introduction

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COOPERATIVES in one form or another began centuries ago. In the Macquarie Dictionary, the definition of a cooperative is a 'business owned and controlled by members, and formed to provide them with work or goods at advantageous prices'. The range of 'businesses' now considered as 'cooperatives' is broader than this definition as will be evident from the papers in this proceedings. Examples of such 'businesses' include Indonesian contract farmers who own and control their farming business but negotiate their contracts as a 'cooperative' group. Another example is state trading enterprises (STEs) which, as suggested, are state-owned but can be controlled by farmers as a group through legislative requirements such as the election of farmers on controlling boards, both at the Federal and State level (BAE, 1983; 1985). Some of China's past approaches to organising the agricultural sector, such as collective farms, are considered by some as a cooperative approach.

What are some of the inherent common characteristics of cooperatives broadly defined? Ownership and control are obviously common characteristics but the level of democracy has become a key issue in the development of cooperatives. Providing work or goods at advantageous prices is another potential common characteristic. This aspect may relate to labour and other input supplies such as finance, product consolidation, processing and marketing. Counteracting perceived market power being held by employers, input suppliers like financiers, middlemen, buyers, and marketers is one of the key rationales for the existence of cooperatives. Another common characteristic is that, at some stage in their development, cooperatives may require legislative support for such actions as retaining control or providing goods at advantageous prices.

The development of the inherent characteristics of cooperatives over time suggests that they have not been a static concept but that trends have become apparent. Cooperatives emerged as early as the 1820s, if not before, and flourished in the 1830s along with the industrial revolution, with consumer cooperatives starting in 1844. Generally, members

had one vote in the early cooperatives regardless of the level of capital investment. As these early cooperatives grew in size the level of membership involvement declined. Recent trends are reflected in the situation of 'new cooperatives' where members have greater ability to accumulate and withdraw their capital, as well as stronger governance. Another trend in developed countries is that where there has been an increase in reliance on competitive markets through domestic reforms and globalisation, surviving cooperatives are having to rely less on legislation providing protection/assistance and are becoming more commercial (eg Bonlac).

Legislative support for cooperatives may have been appropriate in the past, given developing markets and market failures, but agricultural-related markets have developed dramatically over time with forces for change like globalisation, competition policy, liberalisation and privatisation. Long-established institutions in Australia, such as marketing boards, that have the characteristics of cooperatives, have been identified by processors as possible constraints to the development of downstream industries where future growth and trade reside (ABARE, 1987). There has also been a domestic issue concerning these boards 'crowding out' private enterprise activities. These institutions, especially those with single desk powers, have also been targeted by overseas traders as impediments to open trade and liable to disputes involving the WTO. Other countries with current high government subsidies to farmers see such boards as a new opportunity to assist farmers in a more WTO-legal way (APSEM, 2001). Where cooperatives have not become more market-oriented, financial pressures imposed by the amount of assistance required for them to survive in a non-market form is putting pressure on their continued existence as such. This is more the case in federal systems with decentralisation where states often have to pick up such costs with insufficient funding. Financial pressures are also evident where cooperatives have moved beyond their initial purpose, such as the Nokyos in Japan which undertake peripheral activities like retailing,

travel, banking and transport, much of which are not commercial and only survive through government support. These cooperatives have become political organisations heavily aligned with the ruling Liberal Democratic Party, implementing government policies, for example on rice acreage control. These apparent agricultural institutions are under most pressure for reform from factors outside agriculture, such as financial liberalisation (RIRDC 2003).

Despite a high failure rate amongst cooperatives, they have remained attractive to some groups. Why is this so? Is it a continued belief that farmers face unfair market power in their dealings? Are these concerns still relevant given developments in competition policy in many countries and increasing globalisation? Do new forms of cooperatives overcome many of the problems of old forms of cooperatives in the new economic environment? Are 'cooperatives' established for individual farmer benefits or broader sectoral political interests? Has new technology been a positive (leading to more concentrated market power) or a negative for cooperatives? These are just a few of the issues that need to be considered at this workshop.

A regular question that was asked leading up to this workshop was "How did its structure and decisions about who would participate evolve?" The initial stimulus for such a workshop was a request from Indonesia for ACIAR to be involved in collaborative agricultural policy research on cooperatives. A key issue in Indonesia at the time was the need to fill vacuums in input and output markets created by the demise of some conglomerates and other institutions as a result of the Asian crisis, with cooperatives being thought of as possible substitutes. Indonesia has had cooperatives in the past, such as in the dairying sector (Erwidodo and Trewin, 1996). At the same time, other developing countries, such as transitional economies like Vietnam that had not yet established non-government institutions in some markets, had shown interest in collaborative research on cooperatives. Thus it was decided to run a broader workshop covering key issues and trends associated with cooperatives, drawing on relevant experiences of developing and developed countries like Australia.

The broad range of papers included in this report cover various aspects of the title of the workshop. A range of specific countries are covered other than Indonesia and Vietnam, for example, China and India. These countries are representative of many other countries with an interest in this area. There are

papers looking at recent trends in a long history of evolving cooperatives in developed countries that may show the future for developing countries, for example the development of 'new cooperatives'. This discussion shows the danger of cooperatives not moving with the times and becoming a constraint on, rather than a possible catalyst for, development. The evolution of cooperatives in one country is covered in a paper on China's experience with cooperatives. Another paper describes the experience of Bonlac, a dairy cooperative in Australia. Dairy cooperatives in India are facing similar pressures to those faced by Bonlac and the paper by K.V. Raju analyses this situation. As mentioned earlier, state trading enterprises display many of the characteristics of cooperatives and a presentation (not published) looked at these institutions in India in light of WTO reform pressures. Vietnam is a transitional economy just coming to terms with the role cooperatives may play in its agricultural markets. Two papers look at this issue, one from the perspective of government interventions. The final papers look at Indonesia's situation, one in terms of filling voids in its agribusiness sector, another in terms of a contract farming approach and a third, prepared by Rina Oktaviani, on Indonesian cooperatives. As can be appreciated from this outline, there are many variations of cooperatives in developing and developed countries, covering various products and functions, some successful and some otherwise. The workshop and this report have attempted to cover as many of these as possible.

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# Issues in establishing agricultural cooperatives

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## Introduction

COOPERATIVES have played a major role in the agricultural industries of all developed countries and many developing countries for well over a century. They have been important in both farm supply (providing fertiliser and other inputs) and product marketing (including transport, storage and processing).

This obvious success has, however, been accompanied by frequent failure. Many cooperatives have been forced into liquidation or merger as a result of changing conditions in their business environments, poor business models, bad management or the failure of members to support them. In other cases, such as Japanese cooperatives, they have become institutionalised by government intervention, becoming part of the system by which farm prices are regulated. In these circumstances, they are inclined to become inefficient and uncompetitive, and a burden on both farmers and the broader economy.

The purpose of this paper is to consider some of the characteristics that distinguish successful cooperatives from unsuccessful ones. It is hoped that, as a result, workshop participants can, if they become involved in establishing cooperatives, maximise the chance that those businesses will succeed. After a brief discussion about the cooperative as a business, the paper considers the reasons why farmers (and others) establish cooperatives. Subsequent sections are concerned with the definition and nature of cooperatives, the particular problems encountered by cooperatives as businesses, and finally, some solutions to those problems.

## The cooperative as a business

Cooperatives in agriculture are first and foremost businesses. As such they must succeed in the marketplace, competing against other cooperatives, and businesses established as companies or other entities. To compete successfully, they must do most of the things that other businesses do at least as well as those other businesses.

Take a grain marketing cooperative as an example. Such an enterprise typically collects grain from its members, transports, grades, stores, markets and arranges payments. In order to undertake these functions, a cooperative seeks to obtain capital at competitive rates, acquire or lease assets, hire employees or contractors, manage funds, acquire and disseminate market information, establish corporate governance processes, and so on. If it does not do most of these things at least as well as its competitors, the cooperative will fail.

In other words, while there are often advantages in establishing a business as a cooperative, the fact that it is a cooperative does not guarantee success, even if members have a strong commitment to making it work. Profits must be made if the cooperative is to sustain its capital base. Members must be paid a competitive price; they may accept a lower price for their product for a short period, but cannot do so for long. Customers must also be offered a competitive price; they will not pay a higher price because they are buying from a cooperative. Successful cooperatives are successful businesses first, and cooperatives second.

So in establishing a cooperative, farmers should develop a business plan first. They should agree on the nature and scope of the business, the sources of capital, the business strategy and so on. As part of this process they should consider the corporate structure, which could be a cooperative, company, association or other structure which might be peculiar to the particular country. The best corporate structure will often, but not always, be a cooperative structure.

## Why farmers form cooperatives

The design and purpose of every cooperative is different, so the motives behind their establishment cannot be simply stated. However, three motivations are common. The first is to increase bargaining power. A prominent example is grain farmers in Australia and the USA in the early 20th century, who needed to sell their grain to elevators. Elevator

companies would obtain grain from large numbers of farmers so that they could transport and market the grain in sufficiently large quantities to keep the cost of providing these services down. Because of the distances involved, each farmer was able to sell his grain to only one or few elevators and therefore felt vulnerable to exploitation by those elevators. American farmers responded by forming local cooperatively owned elevators, while the Australians established a mix of cooperative and statutory organisations to store, transport and market their grain. In the subsequent decades, however, improvements in transport, communications and on-farm storage largely overcame the weakness in grain farmers' bargaining power, and a wide range of marketing options became available. For example, it is now possible for many farmers to send their grain by truck to one of several elevators or to an end user (mill or livestock enterprise). In these circumstances grain farmers have less need to sustain their cooperatives and many have ceased trading.

While weaknesses in farmers' bargaining power because of storage, transport and communication issues have declined over time, other sources of weakness have increased. In particular, in a modern economy there are more processors that have advantages based on technology or brands that make them monopoly buyers of certain farm products. An extreme example of technology-based market power is the chicken meat industry, where the major companies control the small number of bloodlines that are capable of producing meat at competitive prices. Farmer-suppliers have virtually no bargaining power except through joint action or government regulation. An example of brand-based market power is the tobacco industry, where virtually all product is sold through a few dozen brands owned by a small number of companies. In Australia, cooperatives have been established by tobacco growers to negotiate sales to the tobacco companies.

Another important factor causing farmers to have weak bargaining power is the perishability of the product they produce. The important example is the dairy industry, where farmers must find a customer for their milk every day. A farmer can typically hold one day's production on farm, but must deliver the milk to a processor before the next day's milk arrives. In view of this extreme vulnerability, it is not surprising that cooperatives are more prominent in the dairy industry than any other. And the prominence of cooperatives has not declined greatly over time in the dairy industry as it has in many other industries.

The second common motivation for establishing cooperatives is the advantages offered by governments to this form of corporate structure. In many

countries, cooperatives benefit from certain exemptions from competition law. These allow members to act together in a way that is not permitted for other businesses. Also in many countries, cooperatives have privileges in taxation arrangements. Typically, profits are not required to be taxed before they are distributed to members. This allows members to reduce their overall tax burden when the tax rate paid by the farm enterprise is lower than the corporate tax rate. Of course this privilege comes at a cost: the same laws that allow this concession also require that the cooperative conduct most of its business with its members. This requirement limits the range of business models for which a cooperative structure is suitable.

The third common motivation for establishing cooperatives has probably become more common in recent decades. This is that the members consider that they have the opportunity to pursue a particular business opportunity through acting together. They may see an opportunity to develop a business with lower costs or one producing innovative, value-added products. Cooperatives of this type are 'entrepreneurial' in nature and generally carry higher risks. They can succeed only with an innovative business model. The New Generation Cooperatives, which are discussed later in this paper, are generally of this type.

## **The definition and nature of cooperatives**

The International Co-operative Alliance (ICA) is a grouping of cooperatives from around the world which is recognised as the collective international voice of cooperatives. The ICA's 'Principles of Cooperation' are regarded as the best guide to distinguishing a cooperative from other forms of corporate organisation, although some cooperatives diverge from the principles in significant ways. These principles, as amended in 1995, are as follows:

### *1. Voluntary and open membership*

Cooperatives are voluntary organisations, open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political or religious discrimination.

### *2. Democratic member control*

Cooperatives are democratic organisations controlled by their members, who actively participate in setting policies and making decisions. Men and women serving as elected representatives are accountable to the membership. In primary cooperatives, members have equal voting rights (one member, one vote) and

cooperatives at other levels are organised in a democratic manner.

### 3. Member economic participation

Members contribute equitably to, and democratically control, the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. They usually receive limited compensation, if any, for capital subscribed as a condition of membership. Members allocate surpluses for any or all of the following purposes: developing the cooperative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the cooperative and supporting other activities approved by the membership.

### 4. Autonomy and independence

Cooperatives are autonomous, self-help organisations controlled by their members. If they enter into agreements with other organisations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their cooperative autonomy.

### 5. Education, training and information

Cooperatives provide education and training for their members, elected representatives, managers and employees so they can contribute effectively to the

development of their cooperatives. They inform the general public, particularly young people and opinion leaders, about the nature and benefits of cooperation.

### 6. Cooperation among cooperatives

Cooperatives service their members most effectively and strengthen the cooperative movement by working through local, national, regional and international structures.

### 7. Concern for community

Cooperatives work for the sustainable development of their communities through policies approved by their members.

The important aspects of the principles have remained consistent for a century. In particular, the principles relating to cooperative structures have not changed significantly. These are the first three principles specifying openness, democratic control, and the source and management of capital. Cooperatives that adopt these principles differ significantly from public limited liability companies. Greenwood (1996) has summarised the differences as shown in Table 1.

## Problems with cooperatives

The characteristics that distinguish traditional cooperatives from other corporate structures reflect

**Table 1.** Differences between cooperatives and public limited liability companies

Function	Cooperative	Company
<b>Control</b>	Voting on a one vote per member basis	Voting in proportion to common stock holdings
<b>Distribution of earnings</b>	In proportion to patronage Earnings, if distributed to members, are excluded from corporate taxable income	In proportion to stock holdings Earnings included in corporate taxable income
<b>Retention of earnings</b>	Most earnings allocated to individual patrons Earnings that are not allocated to individual patrons are included in corporate taxable income	Earnings not allocated to individual owners Dividends paid out to shareholders based on profit or company performance for the year
<b>Equity</b>	No mechanism for individual equity appreciation	Owners share in equity appreciation through market
<b>Board membership</b>	Directors from similar backgrounds and relatively homogeneous	Directors from a diverse range of backgrounds with specialist skills
<b>Shareholders</b>	Generally close to the board	Generally remote, though large shareholders are showing increasing willingness to influence boards
<b>Effectiveness of board</b>	Measures of effectiveness and appointment of appropriate individuals seen as more difficult	Generally easier for the board to take action and improve its performance by appointing the appropriate person
<b>Performance measurement</b>	Difficult to measure	Easier to measure

their strengths but are also the source of some of their weaknesses. These weaknesses are widely recognised, and have been summarised under five headings by Cook (1995).

### **The common property or free rider problem**

Free riders are cooperative members who make use of the capital of the cooperative by supplying produce, but without contributing their full share of that capital. These are generally new or near-new members, who benefit from the open membership and capital management principles (ICA Principles 1 and 3). The free riders receive the same price for their produce as long-standing members and, while the latter may receive more in dividends paid on shares held, this form of member benefit is small or non-existent in a traditional cooperative. The ultimate consequences are that production by free riders is subsidised, leading to oversupply, and members are reluctant to provide capital, leading to a shortage of capital and the inability of the cooperative to sustain and develop the business.

### **The horizon problem**

The horizon problem also arises from the manner in which capital is managed, and also results in a shortage of capital. Members who plan to be suppliers far into the future will favour continuing investment at a rate necessary to sustain their farms and the cooperative. Retiring and dry (non-supplying) members may resist such investment and may even seek to withdraw the capital they have already contributed. The result is inadequate investment and, in the case of those taking the long view, dissatisfied members.

### **The portfolio problem**

Farmers become members of a traditional cooperative in order to supply product to it, however they differ in their preferences for investments with various levels of risk. The more risk-averse members want to invest in the cooperative only to the extent that is necessary to find a market for their produce. Other members may wish to invest more in the cooperative so that it can pursue discretionary business opportunities. These two groups have different views about the purpose of the cooperative. This contrasts with the position of equity investors in companies, all of whom choose those investments because they fit their particular risk preferences. The effect of the portfolio problem is often that the cooperative adopts a strategy between the two extremes, and neither group is entirely happy.

### **The control problem**

Corporate governance is more difficult in a cooperative than in a public company for a number of reasons. If the traditional one member-one vote principle applies, farmers who supply a large volume of produce and have a major stake in the cooperative have no more say over its direction than minor suppliers, and even dry shareholders. Second, there is an absence of the external scrutiny that applies to public companies from skilled investors, in particular financial institutions and analysts employed by stock-brokers, rating agencies and the press. Third, directors typically have less expertise than directors of public companies, and may have less incentive to provide effective governance given that ownership is very widely spread. The common consequence of the control problem is less effective oversight by the owners than applies in public companies, and excessive control by management.

### **Influence costs**

There is typically more 'politics' in a cooperative than in a public company and this has a cost in monetary terms and in terms of poor decision-making. The problems arise partly from the fact that members have divergent interests: members differ according to the size of their farms, the location of their farms relative to collection/processing sites, and so on. The most expensive influence cost in agricultural marketing cooperatives often arises when members in a certain area want their local facility to remain in operation when the overall performance of the cooperative would benefit by its closure. In this case the influence cost is incurred either as excessive operating costs if an uneconomic facility remains in operation, or in time wasted by board and management in managing the politics of closure. Influence costs are generally low in small, narrowly focused cooperatives, and high in big, diversified ones.

### **Some solutions**

The most successful cooperatives are generally those that find ways to minimise or avoid these five problems. Means of overcoming each problem are discussed below, however there is a common characteristic running through these means. This is what is sometimes referred to in Australia as the 'KIS principle', where KIS stands for Keep It Simple.

Cooperatives are best kept simple because of their membership-based nature. Members must agree on how the cooperative is structured and operated, and the more complex the business, the more scope there is for disagreement between members. Disagreements between members can be disastrous because it

is not sufficient for issues to be resolved just by majority vote. Although a majority vote is a democratic and legitimate process, those who find themselves in the minority may leave the cooperative, possibly threatening its viability. So important decisions must be accepted by virtually all members, not just the majority.

Some solutions to the specific problems listed in the previous section are as follows.

### **The common property or free rider problem**

The common property problem is best managed by minimising the extent to which the capital of the cooperative is held as common property. The ultimate expression of this type of capital structure is the so-called New Generation Cooperatives (NGCs).

NGCs became prominent in the USA in the 1990s but their structure has been widely adopted elsewhere. NGCs strictly tie capital provision to delivery rights, so that members contribute capital in proportion to the amount of product they must deliver to the cooperative. New members must buy delivery rights (shares) from existing members and members wishing to cease supplying product must sell their delivery rights. The result is that members benefit directly and proportionately from their investment, so are likely to be willing to provide capital when a business opportunity appears.

There are no obstacles to new cooperatives being established with a capital structure of this type, however it is more difficult for existing cooperatives to do so. Typically, existing cooperatives already have a substantial amount of unallocated capital, and members delivering amounts of product which are unrelated to their shareholdings. In such circumstances, many cooperatives seek to move towards an NGC-type structure by gradually buying out 'dry' shareholders, by requiring capital contributions from new members, and by increasing the dividends paid to shareholders. This is often a difficult and slow process, but there are many successful examples.

### **The horizon problem**

The horizon problem can also be alleviated by adopting a NGC-type capital structure. Because under this structure shares are freely tradeable at market prices, even those members who do not intend to remain members far into the future can benefit from new investments if these investments are successful and ultimately raise the value of shares.

### **The portfolio problem**

Like the common property and horizon problems, the portfolio problem relates to the capital structure

of the cooperative and its ability to raise capital from members. However, compared to the first two problems, which can be largely overcome by establishing an appropriate capital structure, the portfolio problem is less easily solved. It reflects very different views among members about what the cooperative is all about.

At one end of the spectrum, there may be members who see the cooperative simply as a way to increase their bargaining power. Such members will favour confining the cooperative's activities to the minimum necessary to achieve that objective. This minimum level of activity might involve the cooperative in negotiating prices with a buyer or buyers, without itself taking delivery of the product.

At the other end of the spectrum, there may be members who see the cooperative as an opportunity for members to capture downstream margins which are currently captured by distributors, manufacturers, wholesalers or retailers. However, these margins can generally be captured only with a higher level of (and more risky) investment by members.

Many cooperatives seek to bridge this difference between members by separating the funding of the cooperative into two parts. The close-to-farm activities that all members consider to be necessary are funded by all members on an equitable basis, and the later-stage 'value adding' is funded by other sources of capital. These other sources may be those members who choose to participate, or external investors. Sometimes joint ventures with private companies are used as a means of accessing outside capital. Such arrangements are common enough, and often succeed at least for a period, but in solving the portfolio problem, many cooperatives accentuate the control problem.

### **The control problem**

As indicated earlier, a number of characteristics of cooperatives make corporate governance difficult, relative to other corporate structures. Having two sets of members/shareholders to overcome the portfolio problem greatly complicates this task. The two businesses are likely to be competing for capital and management time, and in conflict over the terms under which one sells product to the other. The problem is best overcome by maintaining an arms-length separation between the businesses.

Other aspects of the control problem are more easily alleviated. The problems arising from the one member-one vote basis of governance can be overcome by modifying the traditional principles of the cooperative movement and establishing a voting regime based on shareholding (where capital is

allocated to members) or delivery rights. This practice is widely adopted.

The absence of external scrutiny can be partly overcome by bringing in outside expertise, and reporting the information obtained to members. An example of this is the shareholder council established by the Fonterra Cooperative Group, a major dairy processor in New Zealand. This council has the power to appoint expert advisers and to report to members on the views of those advisers.

The final aspect of the control problem, the relative lack of expertise on cooperative boards, is often at least partly overcome by the introduction of non-member directors with relevant expertise. This option is attractive to larger cooperatives which can afford to pay a sufficient salary to attract people with the desired skills. Another option, which is very widely adopted by cooperatives of all sizes, is to provide education and training for member directors.

### **Influence costs**

Influence costs are generally highest for older cooperatives, in particular when they have been formed by amalgamation of a number of smaller cooperatives. Such amalgamations often occur because the scale of operations of the smaller cooperatives is too small, and consolidation into fewer, larger plants is necessary if the businesses are to remain viable. There will be winners and losers among members in such change, and the losers are sure to resist. There are no easy solutions in these circumstances and strong leadership is required to manage the necessary change.

In new cooperatives, differences between members have typically been resolved prior to establishment, so influence costs are relatively low for a period. Also, new cooperatives typically start on a small scale with fewer members to disagree and influence costs are likely to be lower for this reason as well.

### **Conclusion**

These means of avoiding the common problems of cooperatives all lend support to the KIS principal. Keeping the capital structure simple and equitable minimises the risk of conflict between members. Keeping the business simple reduces conflict between those members wanting basic services and those wanting to add value. The value-adders may be frustrated, but they may have other ways of investing in downstream businesses. Keeping the business simple also reduces control problems. The NGCs have been notably successful on control issues, and this is generally regarded to be at least partly because they are generally highly focused and narrowly defined businesses.

Keeping it simple is, in any case, a good starting point for any new business. Growth and complexity can always be added later. So it is important for those establishing cooperatives to have a clear idea of their purpose and to focus on that. If, as is frequently the case for farm cooperatives, the primary purpose is to increase the farmers' bargaining power, then the cooperative needs only undertake those activities that are essential to that purpose. Thus, it may need to take delivery of the product and store it in one or a few places but having done that, it has the opportunity to negotiate sales to processors or other customers.

In this way, a cooperative can minimise the requirement for its members to contribute capital, and minimise the risk of the investment. At the same time, the benefits in terms of improved bargaining power, may be just as great as if the cooperative had taken on many of the tasks in the supply chain.

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# China's experience with agricultural cooperatives in the era of economic reforms

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## **Introduction**

AGRICULTURAL cooperatives have been an important way for farmers to organise themselves. The agricultural community has usually been characterised as geographically scattered, which, in turn, results in the community being disorganised, lacking negotiation power in the market, and lacking a voice in society. Various types of agricultural cooperatives, when properly used and organised, can help the agricultural community to avoid or reduce the above weaknesses.

In China, as in many other countries, agricultural cooperatives have been used as a way of organising farmers. They were strongly favoured in the mid 1950s and this led to the establishment of tens of thousands of agricultural cooperatives across the country by 1957. Areas of cooperation were chiefly in agricultural production but also in rural supply and marketing, and agricultural credit. This massive movement of agricultural cooperatives soon evolved into the people's commune movement. As a result, agricultural production cooperatives were soon replaced by agricultural collective farming in the form of 'production teams' at the grass roots level, 'production brigades' in the middle, and 'people's communes' as the highest level of rural administrative organisation.

The people's commune system was gradually dissolved as a consequence of China's economic reforms that started in late 1978. Individual rural households regained their autonomy to carry out production activities. While the marketing of some of their produce was still subject to government quotas in the earlier years of the reforms (especially in the case of grains and cotton), over the past two decades government control over farmers' disposal of their products has been significantly reduced. How have small individual Chinese rural households coped with the extremely small scale of production and the markets that have become increasingly competitive and also open to the rest of the world? Have

they cooperated among themselves to increase their production ability or their negotiation power in the market and, if so, how? To answer these questions, it is interesting and useful to look into China's experience with agricultural cooperatives since the economic reforms. China's experience may also bring useful revelations to other developing or transitional economies.

In the next section, we briefly look back at what happened with China's agricultural cooperatives before 1978. The following section focuses on what has happened with agricultural cooperatives in China since its economic reforms in the late 1970s. It highlights the reasons for the development of agricultural cooperatives; areas, depth, and scope of cooperation; and reasons for development or lack of development in different regions. We then evaluate the development of China's agricultural cooperatives in the era of economic reforms, highlighting experiences and lessons from these cooperatives. This is followed by a discussion of the likely development of China's agricultural cooperatives in the future and some concluding comments.

## **China's agricultural cooperatives movement in retrospect**

Cooperatives started to emerge in rural China as early as the 1920s under the Kuoming Tang government (Pan, 2002). The concept became widely known in China in the 1950s.

After the Communist Party of China came to power, the new government soon carried out a nationwide land reform, which began in late 1950 and was largely accomplished by the end of 1952. This reform entitled millions of farmers to their own land and also to some basic production inputs. Many farmers were full of zeal to work their own land. However, many rural households lacked capital, draught animals or some essential large farming tools and their production activities were limited.

Some farmers desired to cooperate among themselves and formed mutual aid groups. There were 2.72 and 4.68 million agricultural production mutual-aid groups in 1950 and 1951, respectively (Table 1), embracing 11% and 19% of rural households in the corresponding years.

The government encouraged this and a 'Resolution about Mutual Aid and Cooperation in Agricultural Production (Draft)' was issued in December 1951 (Huang et al., 1992). This led to an immediate jump in the proportion of households participating in agricultural production mutual-aid groups, from less than 20% to almost 40% (Table 2). In February 1953, the above draft resolution was formally passed.

In December 1953, the government promulgated another 'Resolution on Developing Agricultural Cooperatives' (Huang et al., 1992). As a result, agricultural production cooperation gathered renewed momentum in 1954, during which time the proportion of households participating in cooperation

jumped by another 20% (Table 2). Later, two other government documents regarding cooperatives were issued: one in October 1955, which is a 'Resolution on Further Promoting Agricultural Cooperatives' and the other in June 1956, which is a set of 'Demonstrative Guidelines for Advanced Agricultural Cooperatives' (Huang et al., 1992). With such a strong push by the government, the level of cooperation in agricultural production increased rapidly. The strength of cooperation also increased rapidly. It took about six years for mutual-aid groups to evolve into preliminary cooperatives (1950–55) but it took only about two years for preliminary cooperatives to evolve into advanced cooperatives (1956–57) (Table 3). By the end of 1957, almost all the rural households belonged to agricultural production cooperatives, with the majority belonging to the advanced cooperatives (Tables 2 and 3).

At the lower level of cooperation in the form of mutual-aid groups, households were still the basic economic entity and they owned all the means of

**Table 1.** Development of agricultural production mutual-aid groups in China in the 1950s

	1950	1951	1952	1953	1954	1955	1956
Mutual-aid group (1000)	2724	4675	8026	7450	9931	7147	850
Year-round			1756	1816	3801	3172	
Seasonal			6270	5634	6130	3975	
Participating households (1000)	11,313	21,000	45,364	45,637	68,478	60,389	10,420
Year-round			11,448	13,329	30,713	32,843	
Seasonal			33,916	32,308	37,765	27,546	
Average size per group	4.2	4.5	5.7	6.1	6.9	8.4	12.2
Year-round			6.5	7.3	8.1	10.4	
Seasonal			5.4	5.7	6.2	6.9	

Note: Data are obtained from the two sources as indicated below. Data in both sources contain errors. Cross-checking is carried out to correct errors where possible. The number of participating households for 1956 in both sources is 1,042,000 but has been adjusted to be 10,420,000 because the average group size given in both sources was 12.2.

Sources: Huang et al., 1992; Du, 2002a.

**Table 2.** Percentage of households participating in agricultural cooperation out of total households

Year	Total (%)	Agricultural production mutual-aid group (%)	Agricultural production cooperatives (%)
1950	10.7	10.7	
1951	19.2	19.2	
1952	40.0	39.9	0.1
1953	39.5	39.3	0.2
1954	60.3	58.3	2.0
1955	64.9	50.7	14.2
1956	97.2	0.9	96.3
1957	97.5		97.5
1958 (mid year)	98.4		98.4

Source: Huang et al., 1992.

**Table 3.** Development of agricultural cooperatives in China in the 1950s

	1950	1951	1952	1953	1954	1955	1956	1957	1958
No. of cooperatives (1000)	0.019	0.130	3.644	15.068	114.4	633.7	756	789	741
Advanced	0.001	0.001	0.010	0.015	0.2	0.5	540	753	
Preliminary	0.018	0.129	3.634	15.053	114.2	633.2	216	36	
Participating households (1000)	0.219	1.618	59.028	274.852	2297.0	16,921.0	117,829	121,052	122,354
Advanced	0.032	0.030	1.840	2.059	11.8	40.1	107,422	119,450	
Preliminary	0.187	1.588	57.188	272.793	2285.2	16,880.9	10,407	1602	
Average size per cooperative	11.5	12.4	16.2	18.2	20.1	26.7	155.9	153.4	165.1
Advanced	32.0	30.0	184.0	137.3	58.6	75.8	198.9	158.6	
Preliminary	10.4	12.3	15.7	18.1	20.0	26.7	48.2	44.5	

Note: Data are obtained from the two sources as indicated below. Data in both sources contain errors. Cross-checking is carried out to correct errors where possible.

Sources: Huang et al., 1992; Du, 2002.

production. They cooperated by using each other's production means for a fee and they also carried out simple planning and division of labour. The scale of a mutual-aid group was also relatively small (Table 4). When the level of cooperation was increased, the households gradually lost ownership of their means of production and they got paid according to the labour they provided to the cooperatives. In the meantime, the scale of a cooperative also increased when the level of cooperation was escalated, ie from preliminary to advanced cooperatives (Table 4).

**Table 4.** Increase in the scale of mutual-aid groups and cooperatives

	Average per Group or Cooperative		
	Mutual-aid group (1954)	Preliminary cooperatives (1955)	Advanced cooperatives (1957)
No. of households	7	27	170
No. of population	30	124	740
No. of labourers	15	60	349
Arable land (mu)	98	470	2179

In the 1950s, mutual-aid groups suited the very small and vulnerable farmers better. This can also be seen by the fact that an increasing number of households opted for joining mutual-aid groups as shown in Table 1. The scale of such groups remained small, with an average of six to eight households per group (Table 1). Unfortunately, the ideology that 'big is

better' prevailed and the government added incentives to indulge this ideology. As early as 1953, the tendency for some to hastily push the mutual-aid groups to expand and to evolve into cooperatives was detected and reported to the central government (Huang et al., 1992). But the tendency could not be reversed.

The situation worsened, with some proposing even bigger cooperatives at the end of 1957 after all farmers had been persuaded to become members of the advanced cooperatives. In April 1958, the government issued its 'Opinion on Merging Smaller Cooperatives into Bigger Cooperatives' (Huang et al., 1992). Subsequently, some advanced cooperatives were merged to become 'collectives villages' or 'communist communes'. In August of the same year, the government passed its 'Resolution about Issues related to the Establishment of People's Communes in Rural Areas' (Huang et al., 1992). By the end of September, over 740,000 advanced cooperatives were all converted to about 24,000 people's communes.

Within a people's commune, there were production brigades at the next level and production teams at the lowest level. There were about 30 households in each production team. This collective system lasted till the end of 1982. During most of the lifespan of this system, production and marketing faced little uncertainty as the 'unified purchasing and sale systems' dictated to the production teams how much to produce and how much to deliver to the government. Hence, as soon as the people's communes emerged, production cooperatives disappeared in China because the need for cooperatives disappeared. (The Editorial Office (2002) provides some evaluation on the cooperatives experiences in

contemporary China. It contains a number of cases of agricultural cooperatives.)

While the preliminary agricultural production cooperatives expanded quickly during the mid 1950s, China's rural supply and marketing cooperatives and rural credit cooperatives also developed quickly. However, they did not fare much better than their production cooperative counterparts. From 1958 when the Great Leap Forward movement took place, they largely evolved into the agents of government departments and could no longer be classified as cooperatives according to the principles of the International Cooperatives Association (Lu 1986; Zhu and Zhang, 1998). Since the economic reforms, many have called for reforming these 'cooperatives' but they have been little transformed (Wan et al., 1988; Liu and Feng, 2000; Sun, 2002). These 'cooperatives' are not included elsewhere in this discussion.

### **Current status of the development of agricultural cooperatives in China**

By the late 1970s, problems of collective farming became more acute. Farmers in some areas attempted to make changes to collective farming arrangements. From late 1978, China's profound economic reforms began, first in rural areas. The government accepted and supported all kinds of reforms to the people's commune system. Fundamental changes to rural economic institutional arrangements began throughout the nation. In early 1983, the government issued a document, 'Various Issues Related to the Current Rural Economic Policies', which endorsed the reforms to the people's commune system. Soon people's communes disappeared across the country and were replaced by the old 'Xiang' system which had been in place previously. Production brigades were renamed back to Cun (villages) but in many places, the term 'production team' remained in use. Under this arrangement, each household was allocated land with some other production means and again became an independent economic entity. While villages and production teams no longer intervened in the business decisions of households, they provided (or they were expected to provide) some services to the individual households.

In 1985, the 'unified purchasing system' was abolished for all agricultural commodities except grains and cotton. Without government's guaranteed procurement, individual rural households had to increasingly face the market. Then, in 1992, the government made it clear that China would practise a socialist market economy. This placed further pressure on farmers to face the market. Added to

this, in the early 1990s, there was a relative surplus of many agricultural products in China. Thus, some kind of farmers' cooperation would be useful for those individual households to gain better negotiating power in the market. In the late 1990s and early 2000s, life for Chinese farmers became even more difficult because, not only had they to compete in the domestic market, they also had to face overseas competition. The Chinese government, in order to prepare the country to join the WTO, continuously reduced import tariffs for many lines of commodities, including some agricultural products. For example, China's average tariff rate was reduced from over 40% in the early 1990s to 15.3% by January 2001 (Tian and Zhou, 2001). With the increased competition in the market, farmers' cooperation became even more important for those individual households to survive.

### **Development and scale of agricultural cooperatives since the economic reforms**

From 1979 till 1985, farmers' desire for cooperation was minimal as they had just become 'liberalised' from the collective farming system. They were also largely capable of coping with the market for the following three reasons: (1) A high portion of their major products was still procured by the government under the 'unified purchasing system'; (2) For the majority of farmers, production was still semi-subsistence and the proportion of the marketed surplus of their products was relatively low; (3) Villages and production teams, plus some other service providers from the old system such as agricultural extension stations and the semi-official rural supply and marketing cooperatives, still provided services to those individual rural households.

Following several years' rapid increase in agricultural products, the government abolished the 'unified purchasing system' for most agricultural products except for grains and cotton. In the meantime, the services by those providers from the old system had become weakened. Some noticed the need for farmer cooperation but at that time, asking, or even suggesting, that farmers cooperate was barely possible because farmers feared talking about cooperatives due to their bitter memories of the earlier efforts. Nonetheless, due to the difficulties in disposing of agricultural products, farmers started to try out partnerships in marketing their products beyond their own local areas.

Unfortunately, no statistics about any cooperation were collected during this time. This reflects the fact that people were either fearful or reluctant to talk about cooperatives and the government also gave little attention to farmer cooperation, perhaps trying

to avoid alarming farmers due to its previous record in the 1950s. In 1989, the new Department of Rural Cooperative Economy, based on the previous General Office of Rural Business Management, was formed at the Ministry of Agriculture. This Department was renamed the Department of Rural Cooperative Economy and Business Management in 1998. The establishment of such a department, to some extent, indicated the government's increased attention to the matters of farmer cooperation. From 1990 on, statistics on cooperatives were collected, but not on a regular basis (Table 5). Although these statistics may not be of a very high quality, there are no alternatives. In addition, the 'cooperatives' collected in these statistics do not seem to match the ICA criteria very well. Using strict ICA criteria, the number of cooperatives would have been much smaller.

Table 5 shows that the number of cooperatives was on the increase till 1994, after which it has been steadily decreasing. This, however, does not indicate that cooperation was no longer needed. The decline in the number of cooperatives is most likely linked to the fact that forming cooperatives is only one way for cooperation but there are other possible ways for farmers to cooperate. Hence, farmers may choose between different ways of cooperation depending on their popularity and benefits. Indeed, there have been other forms of cooperation (see below) to which farmers may be attracted. For example, in the mid 1990s, a new model called 'Company + Rural Households' gained popularity and expanded rapidly (Du, 2002b).

**Table 5.** Number of agricultural cooperatives in China since 1990

Year	Number
1990	76,759
1993	94,960
1994	138,027
1995	130,942
1997	123,188
1998	122,623
2000	117,286
2001	114,106

Note: No data for those years not included in the table.

Source: DRCEM, various issues.

### Areas, depth and scope of cooperation

Now we turn our attention to see where and how cooperatives take place in Chinese agriculture. Table 6 shows that a relatively large portion of cooperatives is in farming (40%). Animal husbandry, processing and transportation services account for a

similar portion, being about 21% each. The rest is in various other industries (about 18%).

In terms of the services provided from the cooperatives, technology services and information services are the primary activities of the majority of cooperatives (51%). This is followed by supply and marketing services (27%). About 14% of the cooperatives also have their own profit-oriented businesses. The proportion of cooperatives in the area of credit services is relatively small (9%) (Table 7).

The majority of China's cooperatives are confined within their local areas. Table 8 clearly shows that almost 90% of the cooperatives are within their Xiang areas. Nine per cent are inter-Xiang. Those that are inter-county account for only 2% (Table 8).

### Regional differences

If we use the number of cooperative members per 1000 rural labour force to denote the level of cooperatives development in a region, then there is a distinct difference between regions (Table 9).

It should be interesting to explore why cooperatives in some regions are more developed than in others. One simple approach to discover the reasons is perhaps to examine the local conditions in relation to the needs for cooperatives. In general, the following factors affect the need for cooperatives.

*The level of marketed surplus and market activities.* If the level of marketed surplus is high, market activities increase. Then, the need for cooperation to protect the interests of individual households and to provide marketing services increases.

*The level of labour division.* When division of labour becomes more developed, farmers' demand for all kinds of supporting services increases, especially in production.

*Better utilisation of resources.* When the demand for exchanging the use of resources (for a fee) increases, the need for cooperation increases (eg, a farmer using the capital or production means from another farmer who is not currently in need).

*Voice in the community.* Farmers may get organised when they want their interest better represented in the community.

*The level of agribusiness service provisions.* If the services provided by agribusiness firms are of good quality and at a high level, this mitigates the need for cooperatives.

*Availability of other types of cooperation.* When other types of farmer cooperation are readily available, farmers have the choice between cooperatives and other alternatives.

**Table 6.** Industrial distribution of cooperatives (2001)

Region	Total	Farming		Animal husbandry		Processing and transportation		Other	
		No.	% of total	No.	% of total	No.	% of total	No.	% of total
National	114,106	45,020	39.5	24,439	21.4	23,453	20.6	21,195	18.6
Beijing	1132	364	32.2	530	46.8	122	10.8	116	10.2
Tianjin	418	223	53.3	82	19.6	34	8.1	79	18.9
Hebei	14,465	6404	44.3	3169	21.9	2744	19.0	2148	14.8
Shanxi	4181	1864	44.6	1079	25.8	636	15.2	602	14.4
Inner Mongolia	409	234	57.2	96	23.5	46	11.2	33	8.1
Liaoning	619	371	59.9	185	29.9	16	2.6	47	7.6
Jilin	584	164	28.1	102	17.5	47	8.0	271	46.4
Heilongjiang	4955	2105	42.5	1279	25.8	968	19.5	603	12.2
Shanghai	87	44	50.6	17	19.5	5	5.7	21	24.1
Jiangsu	3830	1416	37.0	1201	31.4	541	14.1	672	17.5
Zhejiang	3060	1070	35.0	514	16.8	456	14.9	1020	33.3
Anhui	4396	1983	45.1	1028	23.4	632	14.4	753	17.1
Fujian	1314	377	28.7	240	18.3	233	17.7	464	35.3
Jiangxi	2695	1267	47.0	397	14.7	774	28.7	257	9.5
Shandong	15,737	5992	38.1	3073	19.5	2576	16.4	4096	26.0
Henan	2415	999	41.4	677	28.0	421	17.4	318	13.2
Hubei	9381	1407	15.0	1202	12.8	3640	38.8	3132	33.4
Hunan	14,856	6840	46.0	2831	19.1	3336	22.5	1849	12.4
Guangdong	2147	975	45.4	506	23.6	271	12.6	396	18.4
Guangxi	10,044	2870	28.6	2283	22.7	3158	31.4	1733	17.3
Hainan	523	95	18.2	153	29.3	226	43.2	49	9.4
Chongqing	367	130	35.4	125	34.1	65	17.7	47	12.8
Sichuan	3759	1673	44.5	1046	27.8	358	9.5	682	18.1
Guizhou	2619	1130	43.1	575	22.0	500	19.1	414	15.8
Yunnan	987	567	57.4	178	18.0	54	5.5	188	19.0
Shaanxi	5020	2556	50.9	850	16.9	1075	21.4	539	10.7
Gansu	3264	1598	49.0	714	21.9	466	14.3	486	14.9
Qinghai	83	38	45.8	18	21.7	1	1.2	26	31.3
Ningxia	484	131	27.1	213	44.0	44	9.1	96	19.8
Xinjiang	275	133	48.4	76	27.6	8	2.9	58	21.1

Note: No data for Tibet.

Source: DRCEM 2002.

Among the above factors, the level of marketed surplus is believed to be the most fundamental and determinant. If a farm household carries out production for subsistence or semi-subsistence purposes, the need for cooperation is minimal. However, the level of marketed surplus is likely to be important, mainly during the earlier stages of market development of a society. When the market becomes further developed, agribusiness firms will emerge and provide all sorts of services to the agricultural community.

To measure the level of marketed surplus, an index can be constructed by using total sales revenue to the total value produced from agricultural products. However, such data for China are not readily available. In this paper, we used per capita GDP as a surrogate measure. It is reasonable to assume that the higher the per capita GDP, the higher the level of market development in a region.

Relating the number of cooperative members per 1000 rural labour force in a region to its per capita

GDP, it is interesting to note that there is no clear correlation between the two. Although the general trend is that regions with a more developed market have a higher level of cooperatives development and vice versa, there are a number of exceptions. That is, some regions with a more developed market have a very low level of cooperatives development, eg, Shanghai and Hainan, while some regions with a less developed market have a relatively high level of cooperatives development, eg, Guangxi and Shaanxi. This seems to suggest that the level of market development or the level of marketed surplus is no longer the greatest determinant of cooperatives development in China and that other factors must play a role. These factors are most likely to be the development level of agribusiness service industries and the availability of other types of farmer cooperation. However, due to lack of data, such assertions cannot be confirmed. Further studies in this area should be rewarding and are called for.

**Table 7.** Services provided by cooperatives (2001)

Region	Technology and information services	% of total	Credit services	% of total	Supply and marketing services	% of total	With own profit-oriented businesses	% of total
National	57,486	51	9683	9	30,841	27	15,300	14
Beijing	433	45	13	1	334	34	190	20
Tianjin	212	59	28	8	37	10	85	23
Hebei	7042	51	1461	11	3508	26	1739	13
Shanxi	5850	72	398	5	981	12	858	11
Inner Mongolia	297	32	53	6	514	55	73	8
Liaoning	347	76	12	3	62	14	34	7
Jilin	222	58	40	10	120	31	2	1
Heilongjiang	2558	70	280	8	558	15	284	8
Shanghai	142	99	0	0	1	1	0	0
Jiangsu	1414	37	92	2	1991	52	325	9
Zhejiang	2061	78	77	3	276	10	216	8
Anhui	1776	42	312	7	1351	32	827	19
Fujian	519	48	99	9	194	18	279	26
Jiangxi	1015	46	232	11	570	26	390	18
Shandong	7359	49	989	7	4378	29	2162	15
Henan	1105	57	167	9	420	22	256	13
Hubei	3987	32	3327	27	4210	34	1021	8
Hunan	2955	35	550	7	3092	37	1822	22
Guangdong	2865	70	71	2	706	17	438	11
Guangxi	3506	37	520	5	3911	41	1645	17
Hainan	183	49	19	5	106	29	62	17
Chongqing	114	34	1	0	142	42	80	24
Sichuan	3944	71	296	5	664	12	664	12
Guizhou	1717	62	229	8	346	12	490	18
Yunnan	1616	91	10	1	94	5	51	3
Shaanxi	2018	46	221	5	1607	36	560	13
Gansu	1748	56	177	6	481	16	696	22
Qinghai	57	90	0	0	2	3	4	6
Ningxia	345	64	9	2	145	27	44	8
Xinjiang	79	65	0	0	40	33	3	2

Notes: No data for Tibet.

Source: DRCEM 2002.

### Other types of cooperation and agribusiness services

Since the availability of other types of cooperation and agribusiness services affects the demand for cooperatives, it is useful to briefly describe other forms of cooperation or similar services that are available to Chinese farmers.

*The 'Company + Rural Household' model.* This model is currently popular and dominating. Companies sign contracts with individual farmers to buy their products. They sometimes also provide farmers with technical assistance and information services. However, in this model, individual households do not actually get organised and each of them is dealing with the company. The farmers are dominated and when the demand for the company's products is reduced, the company may reduce the price paid to the farmers or may not honour the contracts to procure their products. Such examples are numerous,

including one case where farmers had to pour their milk onto the paddy rice field (Liu 2002).

*Shareholding.* Farmers may invest their capital in shares of some entities which may be run by farmers themselves or by some Xiang- or village-run enterprises or any other businesses.

*Partnership.* A small number of farmers may form a partnership to carry out some profit-oriented activities of common interest.

*Using agricultural contractors.* Agricultural contractors owning their specialised equipment have started to emerge. They provide services such as ploughing or harvesting to individual households. Because of China's different climate zones from the south to the north, such contractors often enjoy an extended season for their work, such as harvesting by moving from the south to the north.

**Table 8.** Intra- and inter-regional cooperation

Region	Intra-Xiang	% of total	Inter-Xiang	% of total	Inter-county	% of total
National	90,700	89	9187	9	1877	2
Beijing	957	87	102	9	47	4
Tianjin	326	98	5	2	1	0
Hebei	11,574	92	796	6	145	1
Shanxi	3064	83	607	16	39	1
Inner Mongolia	324	94	6	2	13	4
Liaoning	536	93	21	4	22	4
Jilin	571	98	12	2	1	0
Heilongjiang	4786	97	144	3	25	1
Shanghai	66	76	15	17	6	7
Jiangsu	3529	94	176	5	65	2
Zhejiang	2553	92	190	7	37	1
Anhui	4015	94	237	6	38	1
Fujian	1150	93	76	6	13	1
Jiangxi	1619	65	343	14	536	21
Shandong	14,542	92	1057	7	138	1
Henan	2080	86	317	13	18	1
Hubei	3423	76	870	19	227	5
Hunan	13,542	91	1145	8	169	1
Guangdong	1824	89	186	9	35	2
Guangxi	5816	84	1025	15	93	1
Hainan	270	82	47	14	13	4
Chongqing	283	80	70	20	2	1
Sichuan	3472	92	233	6	54	1
Guizhou	1841	83	319	14	48	2
Yunnan	930	94	56	6	1	0
Shaanxi	3992	81	901	18	45	1
Gansu	2844	92	218	7	37	1
Qinghai	82	99	0	0	1	1
Ningxia	470	97	8	2	6	1
Xinjiang	219	97	5	2	2	1

Notes: No data for Tibet. Total number of cooperatives in this table is slightly different from that in Table 7, as per the original.

Source: DRCEM 2002.

*Large agricultural markets.* These can be assembly/wholesale, retail or combined. The market may deal with only one product or various products. Simple services are available to the participants, particularly to those who travel long distances.

### Evaluation of the development of China's agricultural cooperatives in the era of economic reforms

Cooperation among farmers in China has evolved from almost non-existent in the early years of the rural economic reforms to having developed reasonably rapidly in recent years. However, farmers' cooperation in the form of cooperatives is not substantial. This is clearly reflected by the fact that, per 1000 rural labour force, only 7.3 people were members of a cooperative (Table 9). This low level of development is likely to be due to the following factors:

*1. Farmers' resistance.* Due to farmers' still fresh, bitter memories of their experiences with cooperatives in the mid 1950s and the subsequent people's commune system, farmers feared hearing the term 'cooperation' (he zhuo). In the earlier years of economic reforms, it was not wise to raise such issues with farmers. [In the mid 1980s when the author was editing the journal of the Chinese Agricultural Economists Association (*Problems of Agricultural Economics*), there were contributions that attempted to draw people's attention to the need for farmers' cooperation. However, the editorial office was extremely cautious in deciding whether such contributions would be used at all. As the only national journal at that time that dealt with agricultural economics and policy issues, the journal was closely read by agricultural leaders nation wide. The use of articles calling for cooperation could have been interpreted as a sign that the government might reverse back to 'agricultural cooperation', a topic that was

**Table 9.** Level of cooperatives development denoted by the number of cooperative members per 1000 rural labour force (2001)

Region	Per capita GDP (yuan)	Rural labour force (1000)	Number of cooperatives	Number of members of cooperatives	Number of farmers joining cooperatives per 1000 rural labour force	Number of cooperatives per 1000 rural labour force
National	7543	482,291	114,106	3,535,098	7.3	0.24
Beijing	25,523	1653	1132	114,183	69.1	0.68
Tianjin	20,154	1692	418	40,610	24.0	0.25
Hebei	8362	27,179	14,465	613,524	22.6	0.53
Guangxi	4668	21,596	10,044	471,122	21.8	0.47
Shandong	10,465	36,537	15,737	572,495	15.7	0.43
Shaanxi	5024	13,331	5020	171,556	12.9	0.38
Shanxi	5460	9886	4181	111,425	11.3	0.42
Ningxia	5340	2004	484	21,201	10.6	0.24
Gansu	4163	9422	3264	84,245	8.9	0.35
Jiangsu	12,922	26,844	3830	229,312	8.5	0.14
Zhejiang	14,655	21,701	3060	169,585	7.8	0.14
Fujian	12,362	12,552	1314	91,677	7.3	0.10
Heilongjiang	9349	9188	4955	62,080	6.8	0.54
Hubei	7813	17,817	9381	113,563	6.4	0.53
Hunan	6054	28,776	14,856	171,786	6.0	0.52
Xinjiang	7913	3654	275	16,823	4.6	0.08
Anhui	5221	28,215	4396	126,300	4.5	0.16
Guizhou	2895	18,215	2619	68,437	3.8	0.14
Guangdong	13,730	28,587	2147	90,807	3.2	0.08
Jilin	7640	6400	584	19,826	3.1	0.09
Yunnan	4866	19,710	987	43,077	2.2	0.05
Jiangxi	5221	15,522	2695	32,890	2.1	0.17
Liaoning	12,041	9775	619	19,695	2.0	0.06
Qinghai	5735	1740	83	3413	2.0	0.05
Henan	5924	46,878	2415	57,301	1.2	0.05
Hainan	7135	2295	523	2730	1.2	0.23
Chongqing	5654	13,452	367	10,907	0.8	0.03
Inner Mongolia	6463	6325	409	3781	0.6	0.06
Shanghai	37,382	2550	87	721	0.3	0.03
Sichuan	5250	37,788	3759	26	0.0	0.10

Notes: No data for Tibet. The number of cooperative members for Sichuan (as presented in the original) is clearly an error. Attempts to verify have not been successful.

Source: DRCEM 2002.

better not touched on at the time.] As time moved on, the need for agricultural cooperation became gradually greater and farmers did start to cooperate in various ways. However, they tended to label their cooperation using terms such as ‘united’ (lian he), ‘association’ (xie hui), or ‘cooperation’ (he zhuo), but in many cases they did whatever they could to avoid calling themselves ‘cooperatives’ (he zhu she). Even today, not many cooperatives included in the statistics of Table 5 use that term to describe themselves.

2. *Government’s lack of measures.* While there were significant psychological barriers to cooperatives in farmers’ minds, the government was not able to develop innovative measures to dismantle such barriers. In fact, the government also feared mentioning the term ‘cooperatives’, as reflected by the

fact that it rarely used the term in its official documents for the purpose of encouraging farmers to form cooperatives (except on occasions when the term was used with reference to self-criticising its radical doings in the 1950s). In recent years, the government has been a bit more open in encouraging different kinds of farmer cooperation and sometimes in using the term ‘cooperative’.

3. *Availability of other types of cooperation.* Reluctance to use cooperatives, coupled with the need for cooperation seem to have forced the emergence of other types of farmer cooperation or services that can render farmers with similar assistance. When these types of arrangements emerge and develop, farmers have a choice between them and cooperatives. Hence, the use of cooperatives becomes subject to

the provision of other agribusiness services. The findings from a survey on agribusiness service providers may, to some extent, support this point. Table 10 shows that the proportion of Type II organisations varies as the number of other service providers changes. It is noted that the concept of agribusiness (*chan ye hua*) used in China may be not completely comparable to that used in developed economies.

**Table 10.** Types of agribusiness service providers (%)

Type	1996	1998	2000
I. Companies (Company + Rural Households model)	45.5	49.9	41.0
II. Cooperative organizations including cooperatives	28.6	26.4	33.0
III. Large agricultural markets	12.3	15.9	12.0
IV. Others	13.4	7.9	14.0

*Source:* Niu (2002).

While Chinese farmers were reluctant to use cooperatives, they seem to be very creative in inventing various other ways of cooperation to look after their interests. The emergence of various types of farmer cooperation has led many, including both academics and government officials, to propose the development of China's broad agribusiness services. This is, perhaps, an important breakthrough in government policy thinking; it is a huge step forward in China's agribusiness development that has resulted from the economic reforms, although to some extent it is a by-product of the government's lack of measures to encourage farmer cooperatives.

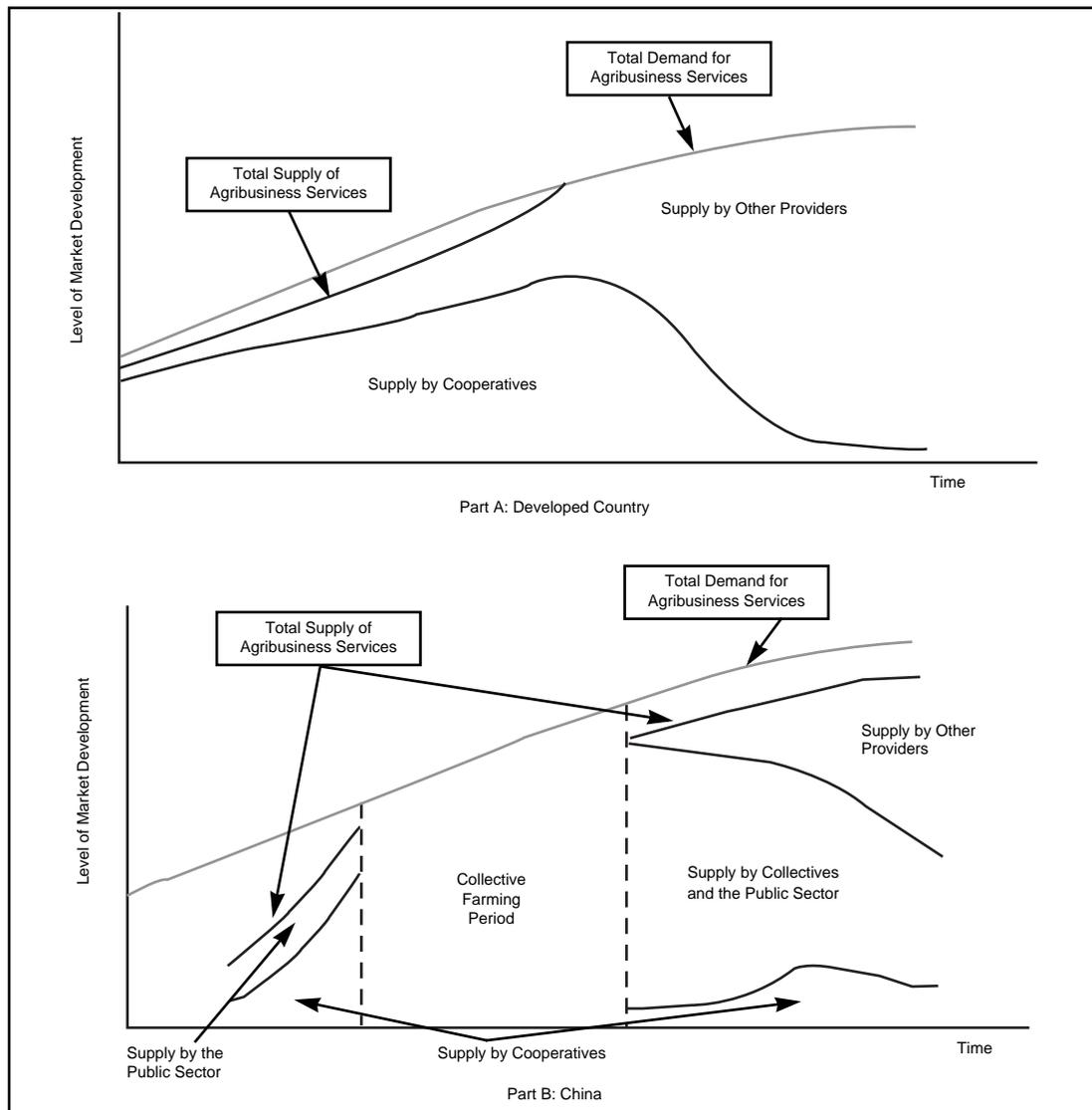
The rapid development of various other types of farmer cooperation in China clearly suggests that agricultural cooperatives are only one form of farmer cooperation and farmers should not have to keep to cooperatives but should be free to devise other forms of cooperation. Reviewing China's experience with agricultural cooperatives in the era of economic reforms in general, and the regional difference in the level of cooperative development in particular, we are led to think that the decline in the importance of agricultural cooperatives in farmer cooperation is likely a general trend when a country's overall economy and market become well developed. To elaborate on this, we refer to the development process of cooperatives in developed countries.

At earlier times in the economic development of today's developed countries, farmer cooperation was important and farmers might have formed various cooperatives to look after their interests. When the economy and the market get further developed, however, firms specialising in serving the agricultural

industry emerged and expanded and hence agribusiness industry started to develop. As a result, many functions performed by cooperatives might have gradually been replaced by the services provided by agribusiness. This clearly reduces the need for cooperatives. For example, in Australia today, there are a small number of large cooperatives but farmers' cooperatives at the grass-roots level are not extensive — though there is a need for them in some cases (Ding et al., 1998). The development of cooperatives in relation to the development of agribusiness industry is simplistically depicted in Figure 1 (Part A) where total supply of agribusiness services is the sum of services provided by cooperatives plus those provided by other providers. The latter includes services provided by both the public and private sectors. At a later stage, total supply is increased and is able to largely match the demand. In some cases it may have been possible that the supply was slightly greater than the total demand, indicating that farmers have a choice between the service providers.

To construct a similar diagram for China is a bit complicated. Part B of Figure 1 may be used as a close representation. After the economic reform started, the services provided by previous collective arrangements were running down until the mid 1980s and the need for cooperation to provide services to the agricultural sector started to increase. From the early 1990s, various agribusiness services began to develop. Related to the differences in regional cooperatives development as shown earlier (Table 9), it may be speculated that (1) in relatively developed regions, agribusiness services are more developed and hence the need for cooperatives has declined, eg, Shanghai and Hainan and (2) in less developed regions, agribusiness services are less developed, and thus the need for cooperatives is still strong, eg, Hebei and Guangxi. The findings from a survey reported in Niu (2002) confirm that the proportion of agribusiness services provided by the less developed China western region out of the national total is much lower, though it tends to catch up in the latest round of the survey (Table 11).

If the above speculation is true, it would imply that the stages of agribusiness development in developed regions in China are somewhere in the middle of a diagram similar to Part A where the need for cooperatives has started to decline. However, less developed regions are still possibly at the stage before the need for cooperatives starts to decline. In the longer term, the total need for cooperatives is likely to decline.



**Figure 1.** Relationships between the Need for Cooperatives and the Development of Agribusiness Industries

**Table 11.** Regional distribution of agribusiness service providers (%)

Type	1996	1998	2000
I. Companies (Company + Rural Households model)	45.5	49.9	41.0
II. Cooperative organizations including cooperatives	28.6	26.4	33.0
III. Large agricultural markets	12.3	15.9	12.0
IV. Others	13.4	7.9	14.0

Source: Niu 2002.

### Prospects for agricultural development in China

Based on discussions in the earlier parts of the paper, the following future development of agricultural cooperatives and related structures is possible.

Given that China's agricultural market is increasingly being integrated into the international market and that China's agribusiness service industry is at an early stage of development, there is a strong need for farmer cooperation.

Agricultural cooperatives as an important form of farmer cooperation are still needed in China and there is room for their development. However, they will not be used substantially by Chinese farmers unless an effective way of overcoming farmers' psychological barriers to cooperatives can be found. In the near future, the development of cooperatives in China will be closely affected by the development of other types of cooperation and the overall development of China's agribusiness industries. In the longer term, the need for cooperatives is likely to decline.

Although the 'Company + Rural Households' model is popular and predominant at present, interest conflicts between the companies and farmers intrinsic to this model are most likely to cause problems more to farmers and, to a lesser extent, to the companies. If this intrinsic problem cannot be properly solved, some farmers may turn to other forms of cooperation.

Should more farmers turn away from the 'Company + Rural Households' model and become organised in other forms of cooperation, including cooperatives, it is possible to see increased use of a 'Company + Agricultural Cooperatives' model or 'Company + Other Types of Cooperation' model. Such models are likely to increase the cooperation between farmers themselves and between farmers and the companies.

More firms will be separated from their current business operations or newly formed to provide specialised agribusiness services to the rural industries and China's agribusiness industries will develop.

The Chinese government's support for agricultural cooperation and agribusiness development is likely to increase. To a great extent, this support is legitimate and desirable. Developed countries took about 200 years to develop their agriculture and agricultural market and then allowed their market to be opened to the world. Even so, some developed countries nowadays still provide heavy subsidies and support to their agriculture. For some developing countries, like China, agriculture has developed from a subsistence level after only about 50 years. Many farmers' production is still largely semi-subsistence or even subsistence in nature. The governments, for various reasons, such as in exchange for WTO membership, have prematurely pushed them onto the international market. In this regard, there is every reason for the Chinese government to provide assistance to farmers to foster their ability to compete internationally. Favourable policies encouraging the provision of agribusiness services to the extent that the supply is able to match the demand (like the situation in Australia, Part A in Figure 1) will be a most

effective way to support Chinese farmers and China's agriculture.

## Summary and concluding comments

After briefly reviewing the development process of China's agricultural cooperatives in the 1950s, this paper highlights their current development status in the era of economic reforms. It addresses the area, depth and scope of agricultural cooperatives and also examines regional differences in the development of cooperatives. Overall, the development of cooperatives in China since its economic reforms has not been substantial.

The lack of development of cooperatives is largely attributable to farmers' resistance to the concept of organising themselves using cooperatives due to their bitter experience in the 1950s. The other contributing factor is the government's lack of measures to dismantle farmers' psychological barriers to accept cooperatives. On the other hand, increased agribusiness services and the availability of other types of cooperation may also have reduced farmers' need for cooperatives.

In view of the very small scale of agricultural operations by millions of households who have to face an increasingly internationalised agricultural market, farmer cooperation is needed even more in China. Cooperatives are an important means for farmers to cooperate among themselves and there is scope for further development of agricultural cooperatives. However, the way in which China's future agricultural cooperatives will develop is uncertain and likely to be affected by a number of factors, of which the lowering of farmers' psychological barriers to cooperatives is possibly the most important. In this regard, the government may need to play an active role. While it should avoid intervening in the internal affairs of cooperatives, the government needs to devise innovative approaches to explain to farmers the nature of cooperatives and to encourage them to accept, voluntarily, that cooperatives are a means of cooperation.

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# Bonlac's experience as an international dairy cooperative

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## Introduction

BONLAC Foods is an Australian dairy company engaged in the conversion of raw milk into manufactured dairy products. The company has a strong cooperative heritage and is controlled by supplier shareholders. Bonlac was established in 1985 in response to the commercial forces that shaped the development of the Australian dairy industry.

The company has a major presence in the dairy industries of Victoria and Tasmania. It was created through the merger of several smaller Victorian-based cooperatives. The merging cooperatives were small-scale operations with a regional marketing focus. Individually, their future capacity to achieve sustainable, competitive returns in the emerging trading environment was limited. Suppliers recognised that a combined entity had the potential to generate higher returns.

In the period since 1985 Bonlac has developed into one of Australia's leading dairy companies. The growth in the business has reflected the market forces that have shaped the development of the Australian dairy industry. Some of the major factors that influenced the development of Bonlac Foods include:

- changes in government policies
- structural adjustment in the farm sector
- rapid growth in the export focus of the industry

By the late 1990s Bonlac had become a major player on the world dairy market accounting for about 5% of world trade (Leatherhead Food, 1997). In 1999–2000, total sales were around \$1.2 billion and the annual milk intake reached 2.4 billion litres (BFL, 2001a). Bonlac was a major supplier of dairy products on the Australian market with a leading position in branded sales of cheese and butter.

More recently, the company's commercial performance has deteriorated. The weaker performance affected the company's competitive position in the Australian dairy industry. Bonlac was unable to pay

a competitive milk price and experienced a loss of milk supply as suppliers left the cooperative for other companies.

A major restructuring was initiated to correct the decline in performance. Non-core assets were sold in order to retire debt. The manufacturing and distribution supply chain was rationalised to reduce production costs. At the same time Bonlac entered into a trans-Tasman strategic alliance with a New Zealand company, the Fonterra Cooperative Group.

## The Australian dairy manufacturing sector

The historical development of Bonlac Foods has been shaped by the market forces driving structural change in the Australian dairy industry. Cooperatives have always been a major part of the industry. Today, the continued strong presence of cooperatives primarily reflects the bargaining position of dairy farmers in the dairy product marketing chain.

Milk is a perishable product. In the short term dairy farmers are unable to make supply adjustments in response to changes in market returns. Once a cow becomes an active milk producer, the milk flow continues for the duration of the season. Producers have no choice but to accept the pricing conditions offered by those seeking to purchase milk.

In the early stages of industry development dairy farmers believed they were in a vulnerable position in the marketing chain. Milk was costly to transport and competition among potential milk buyers was limited. Processing capacity constraints limited the demand for milk at times of peak milk flow.

Dairy farmers had few options for selling their milk. The weak bargaining position of producers created the conditions for regional milk processing monopolies to emerge. Producers were compelled to accept relatively low prices for their milk, particularly during the seasonal peak in production.

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<sup>1</sup> Many changes have taken place in the structure of the Australian dairy industry in recent years. This paper provides a snapshot of the situation in March 2003.

To offset the monopoly purchasing power, producers responded by joining together in cooperatives to develop their own milk processing facilities. This led to the creation of a large number of regional dairy cooperatives throughout Australia. The objectives were to retain ownership of the milk until it was converted into storable dairy products, process all milk supplied by the members and maximise the price they received for their milk.

Over the past two decades the commercial structure of the dairy manufacturing sector has changed substantially. The industry has developed from a domestic-oriented commercial structure to one with a strong global focus. The number of small, regionally based milk processing companies has declined rapidly. A small number of large-scale manufacturing cooperatives have emerged.

Industry output has expanded and exports currently account for more than 60% of Australia's milk flow. In 1999–2000 exports exceeded \$2 billion and Australia was the third largest export supplier on the world market (ADC, 2000). The increase in exports has been driven by the strong growth in milk production in Victoria and Tasmania. In 1999–2000 dairy exports from Victoria exceeded \$1.5 billion.

### **Government policy changes and the formation of Bonlac**

Changes in government policies were the primary driving force behind the accelerated mergers of regional cooperatives. Initially, smaller regional cooperatives merged into larger regional or state-based cooperatives. Over time, these larger cooperatives have themselves merged into even larger organisations.

In 1986 the Federal Government altered the regulations that determined manufacturing milk prices with the implementation of the Kerin Plan. The change in regulatory arrangements was a key factor behind the creation of Bonlac Foods on 1 January 1986. Supplier concern about the longer-term viability of smaller regional cooperatives was another reason behind the decision to form Bonlac.

Prior to 1986 domestic prices for manufactured dairy products were regulated by a system of pooling export returns. The regulations equalised returns across all companies and created a commodity focus for the export sector of the industry. There was very little incentive for individual companies to develop and market new products.

Government regulations had created an industry with two distinct sectors — market milk and manufacturing milk. Both sectors gained benefits through transfers from domestic consumers to milk producers. These transfers increased producer returns

and raised the retail prices of dairy products (ie cheese, butter, etc) above export parity.

The Government used the Kerin Plan to restructure the domestic price support arrangements for manufacturing milk and to reduce the size of these consumer transfers. The changes predominantly affected the dairy industries of Victoria and Tasmania. Both states had large dairy industries and were major producers of tradable dairy products.

The effect of the Kerin Plan was to make company returns reflect the individual export performance of each firm. The regulatory changes were the catalyst for the Victorian industry to focus on export markets as the primary source of industry growth.

### **The formation of Bonlac Foods**

Bonlac Foods was created through the merger of several smaller dairy cooperatives and the acquisition of a complementary dairy marketing business. The primary strategic focus of the company was to convert milk into bulk dairy commodities for sale on the domestic and international markets.

Supplier shareholders of the merging companies were seasonal producers of milk used to manufacture bulk dairy commodities such as cheese, butter and milk powders. Bonlac was established to ensure they received the full market value for their milk in a highly competitive global market.

The company was formed through the merger of three independent dairy cooperatives based in Victoria — the Camperdown-Glenormiston, Colac and ACMAL Cooperatives. A dairy marketing company (IBIS Milk Products) was also included in the merger proposition put to shareholders. Subsequently Bonlac expanded through a number of strategic acquisitions. In 1986 the company acquired Unigate Australia and Murrumbidgee Dairy Products. In 1987 the Drouin Cooperative Butter factory merged with Bonlac.

At the time Bonlac was formed, product sales were primarily focused on the Australian domestic market. Surplus bulk commodities were exported but efforts to develop markets and long-term customer relationships were limited. Over time the growth in Victorian milk production required a stronger focus on export market development.

As exports increased, farmgate returns became closely linked to world market developments. World prices received for bulk commodities determined the underlying base level of returns for Bonlac suppliers. Domestic prices for cheese and butter followed changes in export prices for the same products.

The initial positioning of the company provided limited opportunities to improve supplier returns.

Trading strategies, negotiation skills and the timing of sales have only a marginal impact on producer returns. Longer-term factors, such as the scale and efficiency of manufacturing plants, the product mix and the efficiency of distribution systems have a larger impact though the improvement in average returns is small.

As the company developed during the 1990s, a new strategic direction was adopted. The strategy was to move up the value chain by placing more of the raw milk inputs into higher valued products earning higher returns. This would be achieved by building a portfolio of Australian retail brands and positioning them as market leaders. The strategy was aimed at reducing the dependence on bulk commodity exports where opportunities to enhance supplier returns were limited.

After a period of consolidation, Bonlac purchased the retail brands and food service business of National Foods in 1994. This acquisition expanded the portfolio of retail brands which was to become a key focus of the future strategic direction of the cooperative. The company was investing in the building blocks behind the strategy. It acquired brands and invested capital to promote their position on the Australian market.

### **Bonlac's position in the Australian dairy industry**

The Australian dairy industry revolves around three large cooperatives — Murray Goulburn, Bonlac Foods and Dairy Farmers. Collectively they account for about 65% of Australia's milk flow. The trading performance of these cooperatives has a big impact on farmgate milk prices in the Australian dairy industry. There are a number of other smaller cooperatives with a regional focus as well as several 'proprietary' companies such as National Foods Ltd, Parmalat (Pauls) and Nestle.

Murray Goulburn and Bonlac Foods are producers of manufactured dairy products. Their milk supply base is primarily located in south-eastern Australia. Both companies have a strong export focus and producer returns are determined by world market developments. Suppliers are seasonal producers and milk is typically converted into tradable products such as milk powders, butter and cheese.

The Dairy Farmers cooperative is focused on the drinking milk sector. Its supply base is spread across several states. Historically producer returns have been largely determined by state government regulations on the price of drinking milk. Suppliers are year-round producers. Milk is typically used for retail sales of drinking milk and short-self-life products such as yoghurts and dairy desserts.

Australian dairy cooperatives are primarily supply-driven dairy companies that aim to maximise the price paid to their suppliers for raw milk. They accept all the milk produced by their shareholders. As production has grown the cooperatives have had to expand processing capacity. For the manufacturing cooperatives the supply growth has required a concurrent investment in the development of export markets.

By joining one of the major manufacturing cooperatives, producers gained the security of guaranteed milk purchases. This allowed them to make the on-farm investments required for productivity improvements that were necessary to maintain competitiveness.

Fluctuations in world prices around a downward trend have required producers to expand the scale of their dairy farms. Producers have responded by expanding herds and improving the livestock feeding capacity of their farms. Milk yields have increased and productivity gains have helped to sustain industry profitability.

Proprietary companies such as National Foods and Parmalat have a different commercial focus. These companies are driven by market demand and only acquire sufficient milk to meet their retail product requirements. Their aim is to minimise the price paid for raw milk and maximise returns on shareholder capital. The presence of cooperatives puts a floor under farmgate milk returns. Proprietary companies have to match the returns paid by the cooperatives in order to purchase the milk they require.

Bonlac's position in the Australian dairy industry reflects the growth of the manufacturing milk sector in Victoria. The company's milk supply increased from around 1.5 billion litres in 1990–91 to 1.9 billion litres by 1999–2000. Over the same period Victorian milk production increased from 3.9 billion litres to 6.9 billion litres (ADC, 2001). In 1999–2000 Bonlac accounted for 28% of Victoria's milk production and 23.5% of Australian milk production.

During this period the pressure of adjusting to fluctuations in world market prices has required continual improvements in on-farm productivity. Smaller-scale farms have been leaving the industry and the number of suppliers has been steadily declining. In 1990–91 there were around 15,400 dairy farms in Australia (ADC, 2001). By 1999–2000 the number had fallen to around 7930 — the annual reduction in farmer numbers has averaged 280 per year.

Supplier numbers in Victoria have followed a pattern similar to the national trend in the number of dairy farms. Bonlac supplier numbers also reflected the industry level changes. In 1990–91 Bonlac had

approximately 3500 suppliers. By 1999–2000 supplier numbers had fallen to around 2400.

Over time, Bonlac Foods developed a strong export focus and in recent times accounted for about one-third of Australia’s dairy exports. The two major manufacturing cooperatives — Bonlac and Murray Goulburn — become the dominant suppliers of Australian dairy exports. Bonlac sales revenue increased from \$630M in 1990–91 to \$1237M in 1999–2000 (Table 1). In the late 1990s Bonlac’s export sales contributed about 50–55% of total sales revenues.

### The commercial structure of Bonlac Foods

In commercial terms Bonlac Foods was a cooperative with a board and management committed to supplier control. It was owned and operated by the supplier shareholders. Shares issued to Bonlac suppliers were the only shares which had voting rights at shareholder meetings.

The corporate objective of the company was to maximise shareholder returns in terms of cash flow (milk price and share dividends) and growth in the value of the company. Shareholders gained the full value of any increase in wealth that came from commercial strategies. This was achieved through the payment of commercial dividends on shares and the issuing of bonus shares to reflect the value creation in the company.

The commitment to supplier ownership did not require all equity capital to be obtained from suppliers. Bonlac has raised non-voting equity capital to help fund new investments. For example, in June 1999 Bonlac raised \$100M through the issue of unsecured perpetual notes. While the notes are listed on the Australian Stock Exchange, Bonlac’s share capital is held by suppliers and is not listed on the stock exchange.

Although the company was operated as a cooperative, it was legally defined as a public company governed by Australian corporation law. Until recently

Bonlac was treated as a cooperative for tax purposes under the Australian Tax Act. This status changed in 1999 with a rise in the level of non-supplier capital invested in the company. The change in status was required under existing tax laws and it allowed the company to pay franked dividends to supplier shareholders.

Historically Bonlac Foods has primarily operated three core business divisions:

- consumer products
- bulk commodity ingredients
- beverages.

### The consumer products business

The consumer products division was a key focus of the Bonlac business strategy of moving up the value chain. The strategy aimed to increase the proportion of the business in more secure domestic market segments that delivered higher returns. The focus of the strategy was the development of leading retail brands in the Australian market.

Retail products inherited from the initial merger and acquisition activity were regionally focused with limited distribution. Over time the company invested in brand development and a national distribution system. Additional brands were purchased to increase the product portfolio. The company did not manufacture short-shelf-life products. The product range primarily focused on cheese, dairy spreads and milk powders.

The investments were largely self-funded through retained earnings. Most of the investments in consumer products occurred during the first 10 years of Bonlac’s existence. During this time the company continued to pay a competitive milk price.

A strong portfolio of Australian retail brands was developed. Cheese was a central focus of the brand development activity. The Australian dairy spreads market was a mature market with sales of butter on a slow downward trend. Cheese was a higher-valued product in a growing market segment.

**Table 1.** Financial performance of Bonlac Foods

	2000–01	1999–2000	1995–96	1990–91
	<i>\$A million</i>	<i>\$A million</i>	<i>\$A million</i>	<i>\$A million</i>
Sales revenue	1068	1237	1055	630
Profit after income tax	41.4	–39.0	19.5	6.9
Total assets	841.0	860.1	551.3	320.7
Total liabilities	—	610.1	330.3	200.4
Net assets	—	250.0	221.0	120.3
Shareholders’ equity	311.0	249.4	221.0	120.4

Source: Bonlac Foods Ltd Annual Reports

The consumer products business incorporated two streams of activities — branded retail sales and food service sales. In both market segments brands were promoted and the market shares held by the Bonlac products increased. For example, between 1990–91 and 1996–97 Bonlac retail brands achieved the following gains in national supermarket sales:

- natural cheddar market share increased from 6% to 15% (No. 1 ranking)
- processed cheese market share increased from 9% to 14% (No. 2 ranking)
- butter market share increased from 18% to 38% (No. 1 ranking)
- skim milk powder market share increased from 31% to 33% (No. 1 ranking).

By the late 1990s the company had established several brands as the leading product in key sales categories. The business was predominantly focused on company owned retail brands. There was very little exposure to the house brand and the generic product trade.

There was strong competition from the generic house brands being developed by the major supermarket chains throughout the 1990s. Margins on supplying generic products to the supermarkets were tight but there was a steady growth in sales. Bonlac was able to earn higher per unit returns on retail brands but maintaining its leading market required continued investment in promotional activities.

In the year 2000 cheese brands marketed by Bonlac held an aggregate market share of 14% in branded Australian cheese sales (Table 2). In the same year the portfolio of dairy spreads held an aggregate market share of 33% in sales of branded dairy spreads. Bonlac had a major presence in natural cheese, powdered milk and dairy spreads.

**Table 2.** Bonlac market shares for retail sales of cheese and dairy spreads<sup>a</sup>

	Branded Australian sales of cheese	Branded Australian sales of dairy spreads
	%	%
Bonlac Foods	14	33
Mainland (NZ)	11	6
Murry Goulburn	3	32
Dairy Farmers	14	—
Private label	22	24
Other	38	5
Total	100	100

<sup>a</sup> Based on estimated annual sales for the year 2000  
Source: Bonlac, 2001c.

## The bulk commodity ingredients business

The ingredients division supplied a range of products to customers in Australia and numerous markets. Asian markets were the major overseas customers for commodity ingredients (Table 3). Substantial sales were also made to customers in the Middle East, the Indian Rim, Europe and North and South America.

Japan was the focus of company efforts to move up the value chain in exporting bulk cheese. A Japanese sales office was established to strengthen marketing efforts. Investments were made in production quality control systems to satisfy customer requirements. This demand-driven marketing effort was in direct contrast to the supply-driven commodity approach of the Australian Dairy Corporation in managing ‘single desk’ cheese sales.

The composition of ingredient sales varied according to changes in the manufacturing product mix. The annual budgeting process was based on judgments about the relative profitability of alternative outputs. After allowing for the requirements of established customers this process determined the allocation of milk inputs and final product mix.

**Table 3.** Bonlac product mix for ingredients sales<sup>a</sup>

	Composition of ingredient sales on export markets	Composition of ingredient sales on the Australian market
	%	%
Full cream milk powder	35	8
Skim milk powder	25	17
Other powders	20	5
Cheese <sup>b</sup>	17	10
Spreads <sup>c</sup>	3	3
Liquids <sup>d</sup>	—	57
Total	100	100

<sup>a</sup> Export composition based on sales revenue for 1999–2000, Australian composition based on sales volumes for 2000–01.

<sup>b</sup> includes processed cheese.

<sup>c</sup> includes butter, AMF & ghee.

<sup>d</sup> includes fresh and UHT milk.

Source: Bonlac 2001c.

Milk powders and bulk cheese were the major export ingredient sales. In recent times milk powders have accounted for about 80% of export sales (Table 4). Asia and the Middle East have traditionally been the major markets for powder exports. A broad range of food manufacturers use the bulk commodity exports. Primary end-uses include ice

cream, bakery products, cheese products, dairy desserts, infant foods and confectionery.

**Table 4.** Major destinations for Bonlac ingredient exports<sup>a</sup>

Market shares of ingredient export sales	
	%
Asia	54
North Asia	11
Southeast Asia	23
Japan	20
Middle East	9
America	4
Europe	3
Other	30
Total	100

<sup>a</sup> Based on sales revenue for 1999–2000.

Source: Bonlac 2001c.

### The beverage business

The beverage business was a late addition to the commercial activities of Bonlac Foods. The aim for the business was to make it the leading non-carbonated beverages business in Australia. Commercial activities were based around the Spring Valley Beverages business which was purchased in September 1997. The beverage business did not include retail sales of fresh milk products.

At the time it was acquired Spring Valley held the number one brand position in the Australian single serve juice market. The company was purchased to provide a route trade distribution network. The commercial strategy was to increase the range of products carried by the Spring Valley distribution network. The overall business strategy of Bonlac Foods was to increase producer returns by using more milk in value-added dairy products. Spring Valley provided an established network for distributing long-life (UHT) flavoured milk products.

Bonlac manufactured Big M flavoured UHT milk products under licence from the Victorian Dairy Industry Authority. These products were marketed through the Spring Valley distribution network. In August 1998 Gatorade sports drinks were added to the suite of products. Licensing agreements were negotiated with the owners of the Gatorade trademark for Spring Valley to manufacture and distribute these products.

In the following year Bonlac commissioned a new plant to manufacture a new range of UHT flavoured dairy beverages. These products were marketed under the Wave brand and rapidly established a competitive position in the route trade. Product

distribution was on a national basis to milk bars, service stations, delicatessens and other convenience stores.

Subsequently, Bonlac negotiated agreements to distribute the high energy, single serve drinks manufactured by Frucor Beverages. These products were also distributed through the Spring Valley customer base. It further expanded the range of products offered to the route trade and complemented the focus of the beverage business on non-carbonated drinks.

### Bonlac investments in manufacturing plant

Operational efficiencies from larger-scale manufacturing plants are a key factor in maximising net returns for cooperative shareholders. Cooperative members provide most of the capital for investments in manufacturing facilities. The extent of the producer investment in downstream dairy processing varies. The minimum level of investment is to create a manufacturing base for converting milk into tradable dairy commodities.

The competitive position of Bonlac Foods was essentially determined by the net returns from processing milk into tradable dairy products. The average net return across all product sales is reflected in the final milk price paid to suppliers. As product prices are largely determined by world market conditions it is the cost of manufacturing, transport and storage that effects cooperative net returns.

A key factor in delivering a competitive milk price is the relative efficiency of the manufacturing and distribution assets used by the cooperative. The scale and operational efficiency of individual plants is important. The configuration of the overall supply chain is also important.

In the mid 1990s Bonlac operated 13 manufacturing plants. The sites were milk receival points, predominantly located in the three major dairying regions of Victoria. Bonlac had a strong supplier presence in eastern and western Victoria and a smaller supplier base in northern Victoria.

The geographical location of the plants reflected the assets inherited from the initial mergers. Manufacturing sites were generally small-scale operations and several were geographically located in close proximity to one another. The supply chain configuration was complex with relatively high fixed costs associated with plant maintenance.

Product distribution is the other major element in the Bonlac supply chain. On-site storage at regional plants was limited, especially during the period of peak milk flow. Several warehouses were used to store product before final distribution to customers.

The company recognised there would be efficiency gains from introducing a centralised distribution system for servicing export and domestic sales.

In 1996 Bonlac leased a purpose-built distribution facility located adjacent to the port of Melbourne. This facility was used to consolidate and dispatch export orders for non-refrigerated bulk commodities. The capacity of the site allowed Bonlac to close some warehousing facilities that had been previously used for product distribution.

Bonlac established a separate distribution centre for refrigerated product. A distribution company with a stand alone facility was contracted to provide these services. This site was used to dispatch sales of consumer products to the major supermarkets, the route trade and overseas markets. The facility also handled distribution for food service sales.

Over time, the growth in milk supply required new investments to expand processing capacity. The company recognised the opportunities for efficiency improvements in the supply chain. Larger-scale plants would spread the cost of overheads over a larger volume of milk. This would reduce per unit manufacturing costs and increase net returns.

A strategy was implemented to concentrate investment in plant capacity at one site in each of the three regions of Victoria. Older, smaller-scale plants would be progressively closed as the new capacity came on stream. In 1996 Bonlac decided to invest \$150M in a new milk powder plant in eastern Victoria to service the expected growth in regional milk supplies.

In November 1998 the shareholders of a Tasmanian manufacturing cooperative (UMT) voted to join Bonlac Foods. This gave Bonlac a dominant presence in the Tasmanian dairy industry with about 60% of the state milk supply (UMT, 1998). It also added another three manufacturing sites to the Bonlac supply chain.

### **The restructuring of Bonlac foods**

The financial performance of Bonlac Foods began to deteriorate in 1999–2000, primarily due to a sustained decline in the value of the Australian dollar and the impact of hedging arrangements on net returns. Losses on the currency hedging portfolio created a substantial differential between the milk price paid by Bonlac Foods and the price paid by competitors. Murray Goulburn did not maintain a rolling currency hedging system and was Bonlac's major competitor for milk supplies in Victoria.

The impact on company competitiveness was substantial. For example, in 2000–01 the Bonlac hedge portfolio would have reduced total revenues by \$75m if an exchange rate of A\$1 = US\$0.55 had

been sustained throughout the year. The loss of milk price competitiveness caused some suppliers to leave Bonlac and join other companies. The loss of milk supply increased supply chain costs and affected the company's ability to service debt.

Bonlac's financial position was unsustainable. The business was highly geared and needed to raise equity in order to reduce the level of debt. Balance sheet gearing (the ratio of net debt to capital employed) was approximately 62% at June 2000.

The deteriorating performance triggered a major restructuring of the business. The supply chain was rationalised with the closure of four manufacturing sites and seven warehouses. The changes improved the operational efficiency of the supply chain and helped to correct the decline in performance.

The restructuring of the business included a decision to sell non-core assets and use the funds to retire debt. The beverage business was a substantial non-core business. In January 2001 the Spring Valley and Wave brands were sold to Cadbury Schweppes for \$30M. Bonlac entered into a supply agreement with Cadbury Schweppes for the supply of long-life dairy beverages including Wave. The beverage manufacturing and distribution assets were also sold and a further \$30M was raised.

This action and the concurrent restructuring of the dairy manufacturing supply chain helped to reduce costs and improve profitability. The company was able to pay a competitive milk price in 2000–01. The restructuring also created the conditions for suppliers to consider the merits of an alliance with a New Zealand dairy company.

### **The strategic alliance with Fonterra**

In May 2001 Bonlac formed a strategic alliance with the New Zealand Dairy Board (NZDB). The alliance substantially changed the business profile of Bonlac. The consumer products business was separated from the ingredient business. Bonlac Foods focused on manufacturing and marketing bulk dairy products.

The terms of the alliance were negotiated with the NZDB. Subsequently the NZDB became part of the Fonterra Cooperative in a major restructuring of commercial activities in the New Zealand dairy industry. When the alliance was formed it valued Bonlac Foods at \$825M on the basis of forecast future cash flows. The implied value of Bonlac supplier shares was approximately \$3.86/share and the issue price of supplier shares (including bonus share issues) was \$1.00.

The NZDB invested \$260M in the alliance, composed of a cash injection of \$80M and the Australian business activities of the NZDB which were valued at \$180M (BFL, 2001c). These business activities

were incorporated into a new dairy marketing company, Bonland Dairies, in conjunction with the consumer products business of Bonlac Foods. The NZDB businesses included a consumer products business based around the Mainland retail brand and a food service business.

### **A joint-venture dairy marketing company**

A key aspect of the strategic alliance was the establishment of the new dairy marketing company, Bonland Dairies. The company was a stand-alone business as a 50:50 joint venture with Fonterra. It purchased bulk commodities, converted the product into retail packs and distributed the products to customers throughout Australia.

Bonland Dairies had sales revenue of around \$560M when it commenced trading (BFL, 2001c). It operated at arms length from its respective parent companies with equal board representation. The business objective was to market and distribute consumer products under the retail brands that were licensed from the parent companies. The parent companies licensed their retail brands to Bonland for 20 years. Bonlac contributed brands such as Western Star, Bodalla, Bega, etc and Fonterra contributed the Mainland brand.

Bonland paid royalties to the parent companies for the use of their respective brands. Net profits from the joint venture are distributed 50:50 to the parent companies. As the business developed, the plan was to create new brands and possibly license other existing brands to strengthen the product profile.

The establishment of Bonland Dairies generated significant cost savings in marketing and distribution. Per unit distribution costs were reduced through combining the respective product handling and transport activities. Marketing expenses were reduced as the business had greater buying power to purchase advertising space.

The Bonland business structure reflected the consumer product focus of its commercial activities. There were three business units. The domestic retail business was responsible for marketing the licensed consumer product brands. The food service business incorporated the Australian food service activities of the parent companies. The international retail business handled the retail export activities of Bonlac Foods. Domestic retail accounted for 60% of total sales. Domestic food service accounted for 25% of total sales and international retail accounted for the remaining 15% of sales.

The domestic retail business was primarily selling consumer products to the five major supermarket chains. The supermarkets have a strong bargaining

position in negotiations with food suppliers. They use their market power to extract favourable pricing conditions which has a flow-on effect for the net returns of milk producers.

A key benefit of the alliance was to strengthen the bargaining power for the branded dairy products supported by Bonland Dairies. The company had a substantial market presence in sales of cheese and dairy spreads. Bonland had a greater influence in product placement and trade promotion conditions when negotiating with the supermarket chains. When Bonland commenced trading it held market shares of about 30% in branded cheese sales and 40% in branded sales of dairy spreads.

The food service business incorporated the existing distribution networks of the parent companies. Cost savings from rationalising distribution activities improved net returns from the food service business. Bonland inherited a strong customer base from Bonlac and was able to offer a wider range of brands and products.

The international retail business continued to service markets in Southeast Asia, the Middle East and the Indian Rim. The business was based on retail brand positions developed by Bonlac Foods. It included several product brands with a strong market presence and a generic dairy product brand, Australian Dairies, with an established position in Singapore and Malaysia. The business focus was retail packs of milk powders, fat-based products and cheese.

Bonland was contracted to purchase bulk commodity requirements from Bonlac and Fonterra. Purchasing conditions were based on world commodity prices. There was an additional margin to cover the cost of transforming bulk product into consumer product specifications.

Transfer pricing arrangements between Bonlac and Bonland ensured the input costs for consumer product sales reflected changes in world market prices. There was greater transparency in the costing decisions that determined milk allocations between commodity exports and consumer products. The discipline of market-based pricing overcame the intra-firm transfer pricing issues which had led to sub-optimal decisions on milk allocations.

### **Current commercial activities of Bonlac Foods**

With the formation of the alliance Bonlac Foods became a milk manufacturing company. It supplied commodity ingredients to international customers and bulk commodities to Bonland Dairies. Debt levels were substantially reduced — debt servicing

commitments for Bonlac declined by about \$300M (BFL, 2001c).

Through the original NZDB investment, Fonterra held a 25% stake in Bonlac Foods. The remaining 75% was owned by the Australian supplier shareholders who owned and operated Bonlac Foods before the alliance was formed.

Australian shareholders retained control of the dairy manufacturing business in Bonlac Foods. A new milk supply cooperative was created to represent the interests of the combined 75% shareholding. The commercial structure ensured the 75% shareholding voted as a single block in board decisions. Bonlac suppliers had 100% control of the new milk supply cooperative.

Royalty payments and dividends from Bonland Dairies became part of the sales revenue stream for Bonlac Foods. The revenue was to be distributed to Bonlac shareholders through the milk price or as share dividends. Export ingredients were marketed and distributed to overseas customers through Fonterra's global distribution network. Bonlac paid a commission to Fonterra for utilising these marketing services.

Under the terms of the alliance Bonlac was obliged to pay a milk price to suppliers equal to 92.5% of the weighted average milk price paid by competitor companies in the Victorian dairy industry (BFL, 2001c). Fonterra was obliged to receive a special dividend when the milk price exceeded this 92.5% threshold. The price formula was an average price paid by competitors weighted by milk intake.

The special dividend paid to Fonterra reflected the company's shareholding in Bonlac Foods. Once the Bonlac milk price exceeded the trigger point the extra revenue would be shared 75:25 between Bonlac suppliers and Fonterra. Ordinary dividends on shareholdings would still be paid if the commercial performance generated additional profits on normal trading activities.

## Concluding comments

The strategic initiatives of Bonlac Foods over the past decade have been driven by the consolidation and globalisation of the food industry. The major customers for Australian dairy products are primarily the global food manufacturers and retailers. Commercial consolidation in the food marketing chain is having a flow-on effect on the commercial structure of the Australian dairy industry.

Retailers are consolidating into fewer global operations. This has increased their market power and put pressure on the margins of food manufacturers. Increasingly the major retailers will only deal with brands that have a strong market position and are

promoted by food manufacturers. They want to deal with fewer suppliers who offer a single integrated distribution service. It creates strong competition for shelf space and reduces supply chain costs. For example, Woolworths and Coles demand a national pricing structure and deliveries to distribution centres strategically placed around Australia.

Retail consolidation is forcing consolidation in the food manufacturing sector. The global food manufacturers operating in Asia, Europe and America want to reduce costs and offset the market power of retailers. They want to deal with fewer ingredient suppliers who offer a distribution system that can service their requirements in several markets.

Globalisation pressures in the food marketing chain are forcing a similar consolidation process among dairy companies. Larger-scale dairy product suppliers have a greater capacity to deal with the concentrated commercial structure further up the marketing chain. The Australian dairy industry is caught up in this globalisation process.

To maintain a sustainable business relationship with global retailers and food companies, dairy manufacturers such as Bonlac Foods need operational scale with national/international distribution capabilities, cost competitiveness in manufacturing and distribution and strong brands and marketing skills.

There will be further consolidation in the Australian dairy industry. Murray Goulburn has investigated the feasibility of a merger with Bonlac but has not proceeded with a merger proposal at this stage. In time there will be further consolidation of the smaller manufacturing cooperatives. The pressure of competing on the world market for dairy ingredients will drive the change unless a cooperative has a niche market position for a high-value product.

To sustain a globally competitive business, Australian cooperatives must become larger-scale operations. Ongoing improvements in cost competitiveness are a key factor in growing shareholder returns through milk price and dividends. Development of specialised ingredients, product innovations and strong consumer brands are the key to moving beyond a commodity dependency. These factors will mean increased requirements for milk and capital.

The world dairy market is characterised by a long-term decline in commodity prices primarily driven by global productivity improvements. Lower costs of production mean lower product prices for consumers and farmers. It is a relentless process driven by competition in domestic and international trade.

Australian producers need capital for on-farm investments to maintain their position as low cost suppliers of milk. Cooperative shareholders are focused on improving the price they receive for milk.

This limits the capital available for investment in manufacturing facilities, R&D and marketing. As a result, the use of non-farmer equity to fund business growth will rise. In addition, farmer shareholders will increasingly demand that commercial structures include a mechanism that allows them to realise some of the value of their investment in downstream processing activities.

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# Changing environment and dairy cooperatives in India

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## Introduction

THE policies of the 1990s — liberalisation, privatisation and globalisation — have accentuated the vulnerability of small-farm agriculture and traditional craft-based, non-farm enterprises, threatening the livelihood and security of large sections of India's population. The limited capacity of other sectors of the economy to absorb these changes is clear from the fact that employment generation is much below the steady increase of the workforce over all these years. Employment opportunities are becoming increasingly scarce and the capital and knowledge intensity of the jobs is steadily on the rise. Under such circumstances as these, dairying has continued to grow and offer opportunities to many marginalised people, especially in rural areas. However, the growth in supplies has created adverse terms of exchange and made dairying unattractive for those who can shift to other occupations. The steep downturn in prices has been checked to some extent by the presence of cooperatives.

Dairying is an important sub-sector of the agricultural sector of India's economy. Among crop and livestock products, milk is the number one farm commodity in terms of its contribution to the gross value of output from agriculture in the national economy. India has more cooperatives and more cooperative members than any other country in the world. Barring a few cooperatives in the supply sectors; namely, credit, inputs, consumers and housing and in commodity sectors like sugar, dairy and fertiliser, cooperatives have not met with wide success. Dairy cooperatives following the Anand pattern are among those that have met with relative success.

## Dairy farming in India

The predominant model of dairy production in India is essentially a sub-system of the traditional farming system. Dairy animals are fed largely on agricultural by-products and crop residues. Less than 3% of livestock feed comes from grains and concentrates

**Table 1.** Share of agriculture and livestock sector in GDP (at current prices, Rs. billion).

Year	GDP (Total)	GDP (Agriculture)		GDP (livestock sector)		
		Rs.	% share	Rs.	% share of total GDP	% share of GDP (Ag)
1980–81	1224	425	34.72	59	4.82	13.88
1985–86	2338	700	29.94	139	5.95	19.86
1986–87	2600	744	28.62	156	6.00	20.97
1987–88	2949	835	28.31	183	6.21	21.92
1988–89	3527	1041	29.52	217	6.15	20.85
1989–90	4087	1154	28.24	275	6.73	23.83
1990–91	4778	1352	28.30	308	6.45	22.78
1991–92	5528	1593	28.82	375	6.78	23.54
1992–93	6307	1779	28.21	432	6.85	24.28
1993–94	7991	2231	27.92	501	6.27	22.46
1994–95	9434	2612	27.69	571	6.08	21.86
1995–96	11,032	2877	26.08	646	5.86	22.45
1996–97	12,853*	3475	27.04	757	5.89	21.78
1997–98	14,267**	3596	25.21	841	5.89	23.39

\* Provisional

\*\* Quick Estimate; *Source:* Central Statistical Organisation, Dept. of Statistics, GOI  
*Source:* www.NDDB.org

(Tikku, 2002). By-products and residues include materials such as straw, hay, bran and husks, which in many parts of India have little economic value. By using them as feed, farmers are able to convert low-value materials into a tradable economic commodity of significant value. Most farm operations are carried out with the help of domestic surplus labour available within the household and, even more importantly, with substantial involvement of women.

Two major uses of dung are as manure and domestic fuel. It is estimated that 46 million tonnes of India's dung output (on a dry matter basis) is used as manure, equivalent to 1.7 million tonnes of chemical fertiliser in a year. About 31 million tonnes of dry dung is used as fuel, equivalent to the amount of energy requiring an additional one million hectares of forest per annum. The imputed economic and ecological value of these outputs is far more than the value of principal outputs from the livestock sector in India (Chabra and Dinh, 2002).

AMUL (Anand Milk Union Limited) is the brand name of the Kheheda district milk producers' cooperative union in Gujarat. This is where the dairy cooperative movement under the guidance of Sardar Patel (later home minister of Independent India) and Morarji Desai (later Prime Minister of India) started in 1946, when the country was still under British rule. The cooperative movement was developed by Tribhuvandas Patel, farmer leader and Dr Verghese Kurien, architect of the world's largest development program, Operation Flood, which made India the world's largest milk producer. Of the 10 talukas of Kheda district, Kapadwanj taluka contributes the maximum amount of milk to Amul, followed by others. Kapadwanj taluka has insufficient water sources for intensive agriculture. Dairying is the mainstay of most families. It has the highest number of dairy cooperative societies. Contrary to normal expectations, the amount of milk received by Amul from the well-developed Charotar area (Anand, Nadiad, Borsad and Petlad talukas of Kheda district) may gradually be outstripped by milk contributed by others. There are several dairy cooperative unions (DCU) which have a similar experience of increased procurement from rain-fed areas and dwindling procurement from irrigated areas, for example, procurement of milk from upland areas of Krishna and the west and east Godavari districts of Andhra Pradesh compared to canal irrigated areas of the same districts (Babu and Reddy, 1995).

Irrigated areas usually offer more lucrative opportunities than producing milk for self and local consumption. This might explain the very low level of procurement of milk from such areas. But dairying in a rain-fed area, even though a technically feasible and attractive option compared to others,

would not be profitable without access to a market. Lucrative alternate employment opportunities are often not available in villages, making dairying an attractive option. The low capital intensity, short operating cycle and steady returns make dairying a preferred activity among the marginal and small farmers (those operating less than two hectares of land) and even the landless who depend for fodder on common grazing and forest lands. About 57% of rural households are marginal and small farmers in about 170 milk sheds serve consumers in about 500 urban centres. A majority of producers have one or two milking cows, which account for some 70% of milk production. Nearly 70 million households hold a total of 98 million cows and buffaloes. On average, milk contributes about 22.5% of the income of rural households.

For India, dairy development is largely a way to improve the rural economy when land is limited and the rural population is large. Capital intensive, large-scale dairy farming with high cost inputs of feed and concentrates is not attractive as milk prices are relatively depressed by the dominant production of milk by conversion of low value crop residues by small and marginal farmers. Over a period of time, this has resulted in adverse terms of trade for large-scale dairying activity and the trend continues. Small producers continue to have a comparative advantage in terms of farm gate price (Tikku, 2002).

Over the past three decades, India has achieved tremendous progress in the field of dairy development. In terms of milk production as well as annual growth in production, India's performance has been phenomenal. The contribution of dairying to rural employment and empowerment of women has also been phenomenal. Within agriculture, dairying as an enterprise has been more successful in distributing the fruits of progress than crop production. In spite of such phenomenal growth, India is far below the world average in terms of productivity. While India has 2% of the world's geographic area, it supports about 18% of the world's cattle and buffalo population, but contributes only about 14% of the world's milk output, largely as dairying continues to remain a sub-system integrated with the farming system.

### **The dairy processing industry in India**

During the period 1980–81 to 2000–01, food grain production increased from 129.6 million tonnes to 195.9 million tonnes; while milk production more than doubled from 31.6 million tonnes to 81 million tonnes, making India self-sufficient in major food commodities such as cereals and milk. India is the first world producer of milk but only about 14% of its production is processed in organised cooperatives,

private and public sectors. Producer households retain 50% of milk in the village itself for home consumption. In addition, a large proportion of milk is processed into ethnic milk products, including sweets and culinary products such as cottage cheese (paneer). Milk that is used in these products is not included in the figures of milk processed by dairy plants.

*Location of dairy processing plants.* Processing plants are normally located near the source of milk because about 85% of milk is water. It may not make much of a difference to have plants nearer to markets, if one is marketing liquid milk. Even then, perishability of raw milk imposes limits. Assuming that liquid milk markets have already reached saturation at current price levels or would be doing so in the near future, manufacture of products would then become imperative. Location of plants, in such an event, is going to confer either an advantage or a serious handicap. Decentralised processing plants or multi-stage processing plants would confer advantages. Traditional product manufacturing industry has these advantages and offers stiff competition. The larger plants scored over much smaller adversaries earlier. Many existing cooperative dairy plants are large-scale ones. These are facing the disadvantage of transporting raw milk over long distances, incurring substantial costs. When traditional competitors establish themselves closer to the sources of supply and manufactured products, this will cut into the existing strongholds of cooperative dairy plants.

*Shorter operating cycles — heart of efficient operations.* If we locate a plant at one point and draw concentric circles with different radii and plot the percentage of milk procured from each of the concentric zones, we would understand the economics of procurement operations better. The larger the share the dairy plant collects from farther away, the greater are its costs of collection.

A similar exercise regarding disposal of milk and/or products highlights the economics of marketing operations. Again, the larger the volume of milk/products the dairy is selling farther away, the larger will be its selling costs.

Another such exercise needs to be carried out with respect to realisation of value over time. Once again, the larger the volume or value of realisation that is taking place farther from the point of incurring procurement and processing costs, the greater would be the costs of inventory, interest, etc. Large-scale working capital and chain of cold storage for distribution will also be required.

The relative advantages enjoyed by small operators largely stem from their shorter operating cycles and relatively high-margin, value-added products.

They will always be able to undercut others, if necessary. Many of the cooperative, private and government dairy plants also suffer from huge idle capacities and the costs associated with them. In simple terms, a dairy plant which is able to procure most of its milk from the nearest point, sell most of its output in the nearest market and realise its value in the shortest possible time would be the most efficient operator, if this is achieved without idle capacity.

*Area of operation.* Although it is not well recognised, operating in a compact area brings definite advantages. It may be advantageous for a dairy plant to encourage scale intensity of milk production at the individual producer level rather than going farther and farther away to collect milk. The milk shed concept is based on these premises. Unfortunately, the operating areas of most cooperatives simplistically coincide with administrative divisions, without any economic logic. It is not uncommon to find producers who are not members of the plant nearest to them but rather of a plant much farther away.

We have to recognise the benefits of a compact area of operation in relation to continuously incurring higher operating costs. Poor milk producers may have to be helped to supplement their capital either directly or indirectly by working out arrangements with credit institutions to increase their scale of activity. This would make dairying more central to their livelihood by increasing the relative share of income from that activity.

## **Operation Flood and the white revolution**

A recent World Bank audit shows that of the Rs 200 crores (1 crore = 10 million) it invested in Operation Flood II, the net return to the rural economy has been a massive Rs 24,000 crores per year over a period of 10 years, or a total of Rs 240,000 crores (Chandler and Kumar, 1998). No other major development program has matched this input:output ratio. Operation Flood, launched in 1970, has been instrumental in helping farmers mould their own development, thus helping them reach consumers in 700 towns and cities through a National Milk Grid. It also helped eradicate the need for middlemen and reduced seasonal price variations. As a result of the cooperative structure the whole exercise of production and distribution of milk and milk products has become economically viable for farmers to undertake on their own. In this manner the farmer himself can enjoy the full fruits of his own labor, instead of surrendering a majority of the potential profit to middlemen.

### Three phases of development

The scheme sought to establish milk producer cooperatives in the villages and make modern technology available to them. The broad objectives are to increase milk production (a 'flood of milk'), augment rural incomes and transfer to milk producers the profits of milk marketing which were hitherto enjoyed by middlemen.

*Phase I* of Operation Flood was financed by the sale within India of skimmed milk powder and butter oil provided free by the EC countries via the World Food Program. During its first phase, the project aimed to link India's 18 best milk sheds with the milk markets of the four metropolitan cities of Delhi, Mumbai, Calcutta and Madras.

*Phase II* of the project, implemented during 1981–85, raised this to some 136 milk sheds linked to more than 290 urban markets. The seed capital raised from the sale of WFP/EEC free products and World Bank loan had created, by the end of 1985, a self-sustaining system of 43,000 village cooperatives covering 4.25 million milk producers. Milk powder production increased from 22,000 tonnes in the pre-project year to 140,000 tonnes in 1989, thanks to dairies established under Operation Flood. The EEC aid thus helped to promote self-reliance. Direct marketing of milk by producer cooperatives resulted in the transfer of profits from milk contracts, which increased by several million litres a day.

*Phase III* of Operation Flood (1985–1996) enabled dairy cooperatives to rapidly establish the basic infrastructure required to procure and market more and more milk daily. Facilities were created by the cooperatives to provide better veterinary first-aid and healthcare services to their producer members.

*Far reaching consequences.* The year 1995–96 marked the termination of Operation Flood III, funded by a World Bank loan, EEC food aid and internal resources of NDDDB. At the conclusion of Operation Flood III, 72,744 dairy cooperative societies in 170 milk sheds of the country, having a total membership of 9,314,000 had been organised. The targets set have either been effectively achieved or exceeded apart from procurement targets which could not be reached as private agencies started procuring milk from the cooperative villages, following the new de-licensing policy under the government's program of economic liberalisation. The conditions for long-term growth in procurement have been created. An assured market and remunerative producer prices for raw milk, technical input services including AI, balanced cattle feed and emergency veterinary health services have all contributed to sustained increases in milk production. Three state-of-

the-art dairies designed to produce quality products for both the domestic and export markets have been commissioned. While the demand for milk was rising under Operation Flood the total cattle population remained more or less static.

The main thrust of Operation Flood was to organise dairy cooperatives in the milk-shed areas of the village, and to link them to the four metro cities, which are the main markets for milk. The efforts undertaken by NDDDB have not only led to enhanced production, improvement in methods of processing and development of a strong marketing network, but have also led to the emergence of dairying as an important source of employment and income generation in rural areas. It has also led to an improvement in yields, longer lactation periods and shorter calving intervals through the use of modern breeding techniques. Establishment of milk collection centres, and chilling centres provided marketing avenues for producers in hinterlands, extended the life of raw milk and enabled minimisation of wastage due to spoilage of milk.

### Anand pattern dairy cooperatives

Operation Flood, which started in 1970, concluded its third phase in 1996. What it achieved covers more than the application of science and technology, though both have played a role; and more than the creation of farmer-owned structures, though such structures have been necessary to success. It covers all of this, as well as the orchestration of all policies and programs that affect production.

The story of Operation Flood can be viewed from three angles. The first is to consider what it did to the dairy industry; the second is from the eyes of the small farmer — it has revolutionised their way of life; and the third is the pattern of success it created for other countries to follow. By promoting the Anand pattern of dairy cooperatives, Operation Flood envisaged a sustained increase in resource productivity, culminating in improved quality of life for milk producers and an assured supply of quality milk and other dairy products to consumers at a reasonable price in a free market environment. Following the cooperative path, market oriented milk production and modernisation of dairying in milk production, processing and marketing progressed significantly. The Anand pattern involved:

- decentralised milk production by small milk producers
- milk procurement by primary dairy cooperatives of milk producers
- centralised milk processing by a union of dairy cooperatives and
- marketing of milk and milk products by a federation of unions

The primary milk producers democratically govern this entire federal cooperative structure to ensure that the higher tier organisations are geared to serve the purpose of the lower levels and the gains at all levels flow ultimately back to the milk producers in a significant measure. The Anand pattern model was the basis of this monumental achievement. The core feature of the Anand pattern model is farmer

control at all three stages of procurement, processing and marketing. Value adding at the procurement and processing stages has been realised by the cooperatives through control over marketing, thus making marketing an essential and critical feature for success. Many cooperatives worldwide end up as suppliers of raw material to private companies as the private companies own brands and marketing.

### **Lessons from the Anand pattern**

Summarised from *Catalysing Cooperation: Design of Self Governing Organisations*  
by Tushaar Shah 1996

#### **A. Market as the pre-condition for post-subsistence production**

In a subsistence production system, in order to raise production and productivity, we must first stimulate and expand the remunerative market opportunities to which subsistence producers have easy, low-cost access.

“In order to create an Anand, it is important to first find a Bombay”.

#### **B. Marketing as the first step to cooperative organisation**

It is best to begin by studying the demand system rather than the production system and to first mount a successful marketing strategy rather than to organise the producers. Where marketing is under-emphasised or mishandled, dairy and other cooperatives failed.

“Production enhancement programs must follow and not precede the commissioning of the procurement, processing and marketing system”.

#### **C. Anand pattern: a superior design concept**

A superior design concept is required to avoid mis-match between demand and supply and also to free the cooperative from competition with small-time players.

“An Anand can capture and retain a Bombay’s market and yet provide its farmer members a stable remunerative market for milk only if it has processing facilities.” Decentralised small-scale production of milk in the villages is more cost-effective than large-scale milk production in urban areas but without transport and processing facilities distant markets cannot be accessed.

#### **D. The principle of pump priming**

The best way to organise a producers’ cooperative is to start with marketing. However, unless producers’ cooperatives are organised, they have nothing to market; and unless cooperatives know how to dispose of the produce, they cannot start the procurement process.

“External resource support is required for priming the pump”.

#### **E. The SNF surplus — distinctive competitive advantage**

The SNF surplus made it possible for cooperatives to offer much higher prices than traditional operators and made it entirely uneconomical for members to make ghee at home. In addition it has helped to ensure a steady supply in spite of lean to flush seasonal variations in milk production.

“The SNF surplus was created by the powder plant and was a source of powerful competitive advantage vis-à-vis the traditional competitors.”

#### **F. Member involvement and professional management**

In the absence of professional expertise, it would be difficult to quickly gain a market foothold on the scale needed and exploit the full advantage offered by technology and the market. Whose interests a successful business enterprise serves will depend upon whom professionals are accountable to, in principle and practice.

“If development of producers is the goal behind building the business, then this goal could be best achieved by ensuring that the business is managed by professionals and technocrats who are and “feel” accountable to producers through their elected board”.

Quotes are attributed to Dr V. Kurien, architect of Operation Flood, a large-scale dairy development project involving millions of milk producers in India.

Dairy cooperatives in India at a glance.

### Reach

The Dairy Cooperative Network

- includes 170 milk unions
- operates in over 285 districts
- covers nearly 1,01,000 village level societies
- is owned by nearly 11 million farmer members

### Milk Production

- India's milk production increased from 21.2 million tonnes in 1968 to 84.6 million tonnes in 2001–02
- Per capita availability of milk presently is 226 grams per day, up from 112 grams per day in 1968–69
- India's 4% annual growth of milk production surpasses the 2% growth in population; the net increase in availability is around 2% per year

### Marketing

- In 2001–02, average daily cooperative milk marketing stood at 13.4 billion litres; annual growth has averaged about 5% compounded over the last five years
- Dairy cooperatives now market milk in about 200 large cities including metropolitan cities like Delhi, Kolkata, Mumbai, Chennai, Hyderabad and Bangalore, and some 550 smaller towns
- During the last decade, the daily milk supply to each 1000 urban consumers has increased from 17.5 to 47.3 litres

### Innovation

- Bulk-vending, saving money and the environment
- Milk travels as far as 2200 kilometres to deficit areas, carried by innovative rail and road milk tankers
- Ninety-five percent of dairy equipment is produced in India, saving valuable foreign exchange

### Macro Impact

- The annual value of India's milk production amounts to about Rs. 850 million
- Dairy cooperatives generate employment opportunities for some 11 million families

Source: www.NDDB.org

## The current situation

Dairy cooperatives account for the major share of processed liquid milk marketed in the country. Milk is processed and marketed by 170 Milk Producers' Cooperative Unions, which belong to 15 State Cooperative Milk Marketing Federations. The Dairy Board's programs and activities seek to strengthen the functioning of dairy cooperatives as producer-owned and controlled organisations. NDDB supports the development of dairy cooperatives by providing them with financial assistance and technical expertise, ensuring a better future for India's farmers. Over the years, brands created by cooperatives have become synonymous with quality and value. Brands

like Amul (GCMMF), Vijaya (AP), Verka (Punjab), Saras (Rajasthan), Nandini (Karnataka), Milma (Kerala) and Gokul (Kolhapur) are among those that have earned customer confidence.

Unfortunately, for several reasons including a) politically dictated leadership in cooperatives b) undue bureaucratic and pervasive control by state governments c) regulation by restrictive and repressive cooperative laws and d) lack of accountable professional expertise that could harness the advantages of technology and market opportunities, the federal cooperative structures that emerged did not function with the autonomy and the independence to truly serve the interests of milk producer members. The federal cooperative structures in several cases (with a few exceptions) and especially the higher tier organisations (unions and their federations) became self-serving, operationally inefficient and loss making ventures and thus became oppressive bodies. Decisions related to procurement and marketing were often not dictated by sound business practice or the long-term interest of the business. This adversely affected the capital accumulation within the federal cooperative structure and slowly crippled their capacity to service debt, perform efficiently and effectively meet with the challenges from domestic and international competition leading to erosion of faith in the cooperative path.

Over the years, remedial efforts were initiated by several organisations and individuals to restore autonomy and independence to dairy cooperatives, to reform central and state cooperative laws and, in some instances, to recommend dismantling of inefficient and oppressive higher-tier organisations. These efforts resulted in:

- progressive parallel Cooperative Societies Acts in several states, starting with Andhra Pradesh
- the enactment of the Multi-state Cooperative Societies Act, 2002 by the central government
- the Companies (Second Amendment) Bill, 2001 which allows incorporation of producer companies that can work in consonance with principles of cooperation under the Companies Act, and without undue political and bureaucratic controls.

## Emerging issues

Opportunities are now available for cooperatives to enter into new strategic partnerships, float joint ventures and negotiate supply or marketing arrangements with other cooperatives and/or other organisations, including companies. What do these opportunities really mean and how can one prepare in order to benefit from them? What kind of pitfalls could one avoid by learning from the experience of

others? The changing liberal context calls for a serious debate to examine such issues as the following:

### **Opportunities for collaborative arrangements**

The emerging liberal context offers collaborative opportunities to cooperatives to experiment with entering into relationships such as strategic partnerships, joint ventures, contractual supply or marketing arrangements etc. with other cooperatives and/or organisations, including companies. There is some apprehension about the implications of such collaboration on the autonomy and independence of policy-making governance systems, strategic, management and operational control systems in various cooperatives in the federal structures. Several other issues include resource sharing, transfer pricing, responsible risk (surplus/deficit) sharing, protection from divesting, transfer of shares to other parties, and transparent and accountable functioning of partners, resolution of disputes and responsibilities in case of winding up or divestment.

- What impacts do such strategic partnerships, contractual supply or marketing arrangements and joint ventures etc. generate for the ultimate members in terms of improved benefits and enhanced democratic control over their own cooperatives?
- What are the risks involved in such strategic partnerships and joint ventures etc., and what measures can be thought of to protect and safeguard member interests?
- What should be the broad terms of such strategic partnerships and joint ventures to ensure the long-term viability of cooperatives in terms of capital accumulation, operational efficiency and capacity to withstand and thrive in the face of domestic and international competition?
- What specific advantages or disadvantages do such collaborations offer in the changed circumstances over other options? What precautions are required to overcome the disadvantages and capitalise on advantages?
- Are still more changes required in the state and central legislation to fully benefit from such opportunities?

### **Future of cooperative federalism**

Experiences with cooperative federalism that primarily emerged to provide access to markets far and wide for inputs and outputs, harness technology and attract capital seem to have created a mix of a few successes and many failures. The future of cooperative federalism needs to be examined in the light of the experience of different sectors in India and also in the light of the experience of cooperative federalism

in other countries. Several weaknesses, such as the following, have come to light.

*Lack of unifying identity.* Many of our primary cooperatives are 'large scale' from the economic theory point of view. The primary co-operative itself can be treated as a federal enterprise of member level economic enterprises. Unless members, their primary co-operative, the union and the federation think of themselves as parts of one large composite business unit, they cannot effectively derive the benefits of unified action. Developments in technology and emerging big markets indicate a bias towards large scale and matching organisations can only use the opportunities offered. Unfortunately, the way the cooperative institutions are organised does not promote such unity. Each cooperative has distinct legal identity and autonomy. Myopic assertions of freedom prevent greater integration. With ever-increasing politicisation, federal structures are becoming contentious.

*Rigid boundaries — barriers for exchange of factors.* There are other barriers for smooth transfer of different factors of production. These factors are strictly identified with autonomously organised units. Even if some units had an excess or a shortage of some of these factors, and judicious transfer across the institutions was mutually beneficial, it could not be done. Federations need to be reconstituted as single commodity organisations with the unions or primaries as constituent parts and not as autonomous units with their own identity. This can be done with sufficient space for member participation as well. Today, the cooperative federations need to respond to competition from much bigger rivals, and can ill afford chinks. The degree of integration and coordination they need is akin to that required in a human body!

While private trade is moving towards increasing scale of operations, cooperative institutions should not lag behind with pseudo considerations of a sense of freedom and autonomy. The history of cooperatives in Europe is replete with examples of successes, where the required degree of integration was achieved, and with failures where the pseudo sense of freedom and identity prevailed in the way of such meaningful mergers (Watkins, 1986).

*Rigid boundaries build myopic vision.* In numerous cases federations force deals, which are advantageous to them, on constituent unions. The surplus/deficit below their level is not of concern to them. Similar thinking abounds at the union and primary levels too, losing sight of the very objectives of the entire structure. In retrospect, cooperative federations of India, barring a very few, have invariably acted against the interests of their constituents. Many

of these are in fact oppressive 'parasites', though they were created to nurture their constituents. The major reason is the way they are structured.

*Decentralisation and unitary structures.* Economic theory suggests a federal entity with a unified, single identity but with several constituent sub-units or small sub-groups. Reorganising cooperative federations in the light of economic rationalism is an urgent and paramount task. Federalism and decentralisation are associated in much of our thinking but federalism and centralisation seem to be the direction in which our cooperative federations have moved. Large structures with a unifying identity need not necessarily go with centralisation, as seen in the reorganisation of several large transnational companies. Networking promotes an essential sense of being part of a large organisation without eroding their sense of autonomy. Unfortunately, the individual identity and sense of autonomy of existing federations and constituents stand in the way of such a grand alliance marked with unified identity.

- Is cooperative federalism still relevant in the changed circumstances?
- What are the specific advantages or disadvantages federal cooperative structures offer in the changed circumstances over other options?
- What changes are required in federal cooperative structures to overcome the disadvantages and capitalise on advantages in the changed circumstances?

### **Role of promotional agencies**

Promotion of cooperatives and their federal structures through external project funding seems to have resulted in low capital stakes of members and weakening demand from members for transparent

and accountable conduct from elected leaders as well as professional managers. With little of their capital at stake members did not insist on the efficiency or profitability of their operations. The following questions about the future of agricultural cooperatives need to be considered:

- What is the role of promotional agencies to make cooperatives and their structures truly successful in terms of member control and self-reliant and sustainable instruments to serve the interests of members?
- What are the appropriate instruments or package of instruments – project funding, equity participation, technical and managerial assistance, policy advocacy, involvement including takeover of management and operations, providing backward and forward linkages, capacity building, subsidising capital costs and operational costs etc?
- Most of these instruments have been tried with different degrees of success and failure both in India and in other countries. What are the lessons to learn from such experiences?

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# Cooperatives in the agrifood supply chain: a review

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## Introduction

THE marketing of agricultural products is undergoing a revolution. Where spot market transactions were once the 'norm' for farmers, increased attention is now being placed on vertical integration between farmers and other agents in the supply chain. This trend in the global food industry reflects growing consumer demand for attributes such as health, nutrition, convenience and variety; and the technological innovation that has enabled these attributes to be produced. Technological advances in farming include, for example, production of leaner pork and biological control of pests, to satisfy western health concerns. Innovations at the preharvest and post-harvest level in the production and handling of fruit and vegetables have satisfied consumer demand for a nutritious variety of fresh produce. Technical innovations in the handling and processing of food have also enabled production of more convenient foods demanded by the urban consumer. However, these processes often require a greater degree of homogeneity in the quality of raw inputs. The overriding feature of these trends has been the high value placed on certain food attributes and the interdependence of decision making along the supply chain to produce such attributes. This interdependence implies that coordination of decision making allows a greater economic gain in the agrifood industry (Hennessy, 1996; Royer, 1995; Kerallah and Kirsten, 2001).

Increasing liberalisation of agricultural markets around the world has meant that developing country farmers are not immune to these changes in the global food industry. The impact of agricultural trade liberalisation on smallholders in developing countries is a hotly debated issue. However, at least in theory, developing country farmers, who have a comparative advantage in the production of some products at the farm level can potentially benefit from participating in the global food industry. One of the significant constraints in the realisation of gains from agricultural production in developing countries is the marketing of these products. These constraints relate to inferior technology in the supply chain,

insufficient information, weak institutional arrangements and high transport and handling costs that are the result of weak public infrastructure. Moreover, consumer preferences in the global market for agrifood products are such that economies of scale are significant.

## The New Institutional Economics (NIE) and agricultural marketing

The industrialisation of agriculture in response to consumer demands has led to an increased interdependence between decision makers and is associated with a high degree of asset specificity in the supply chain. The 'invisible hand' theory of neo-classical economics loses its appeal in complex supply chains where the costs of undertaking transactions are substantial. The New Institutional Economics provides an alternative approach for understanding the vertical organisation of production, and has been applied to the problem of agricultural production and marketing by numerous authors (eg Hobbs, 1996; Gabre-Madhin, 2001; and those reviewed here).

Based on seminal works of Coase and Williamson, the NIE applications to agricultural marketing have focused on vertical relationships in the supply chain and the issues surrounding the transactions between farmers and downstream agents. Two main concepts in NIE are relevant to this analysis; these are theory of incomplete contracts and principal-agent theory. A substantial amount of literature has examined the theoretical justifications for cooperatives *vis á vis* investor owned firms (IOF) in the downstream marketing/processing of agrifood products. It is not surprising that there has been such renewed interest in this field. The significant economies of scale in the downstream sector of the agrifood industry have led to an increased degree of concentration in marketing and processing and the traditional justification for agricultural cooperatives was to provide countervailing power against monopsonistic or oligopsonistic buyers.

The other main area of discussion of cooperatives is their effectiveness as an organisational form. Numerous issues arise in the governance of cooperatives and historical experience indicates that they can run into financial difficulty due to design problems (Cook, 1995). NIE has also been applied to examining property rights and control issues in the management of cooperative firms. The newer cooperatives that have emerged in the 1990s in North America are vastly different in nature and appear to overcome many of the inherent difficulties previously encountered.

The aim of this review is to examine the theory of cooperatives with particular attention to the question of their involvement in downstream activities in the agrifood chain, and to assess its relevance to developing countries (particularly in the context of their participation in world markets). The first section examines NIE theory in terms of its insights into the organisation (vertical integration) of modern agricultural markets, and addresses the question of the relative advantage of cooperatives over investor owned firms. The second part examines the literature on the internal management of cooperatives. The final section summarises the key points and examines the question of relevance of the literature to developing country markets.

### The theory of incomplete contracts

The theory of incomplete contracts focuses on the problem of asset specificity that is characteristic of many decisions in the agrifood chain. Assets are said to be 'specific' if there is a divergence between acquisition cost and resale value, and there is imperfect competition in the market that can allow one of the parties in the transaction to act opportunistically (Staatz, 1987b).

An example that is often cited is the case of a primary producer who needs to make a specific investment (such as in capital or knowledge) in order to produce a raw input that is required by a processor. The investment is specific to the type of product required by the processor, and involves a fixed investment that has no value elsewhere. A numerical example presented by Hendriske and Veerman (2001) is repeated here for illustration:

The potential for opportunism can discourage investment that is otherwise socially efficient, as illustrated in Figure 1. This renegade behavior is usually deemed to arise from the incompleteness of contracts — because it is not possible to specify all contingencies *ex ante*, the renegade uses the excuse of 'unforeseen circumstances' to get out of the *ex ante* agreement.

### Asset specificity: cooperatives vs investor-owned firms

The 'hold-up problem' illustrated in Figure 1 concurs with the notion of countervailing power that has been used to justify the establishment of cooperatives. Numerous authors have considered whether cooperatively owned firms can offer more security and certainty for farmers' investment choices and thus solve the 'hold-up problem' (eg Royer, 1995; Skyuta and Cook, 2001). Staatz (1987b) acknowledges that there may be alternative collective response solutions to the problem, such as lobbying the government, or suing contract breaches, but argues that a marketing/processing cooperative may be more cost effective.

However, as Hendriske and Veerman (2001) point out, asset specificity exists on both sides of a transaction between farmers and processors. Indeed, the large economies of scale associated with modern agrifood chains may mean that the asset specificity problem is more important on the processing side. The processor investing in sunk capital may fear that farmers will try to negotiate a share of the quasi surplus, with the threat of withholding supply of its raw input. They consider the distributional consequences of investor-owned (where the surplus is shared between farmers and processors), and cooperative processing firms (where all the surplus is owned by farmers). Their general result is that efficient governance structures (ie sharing of surplus rules) depends on the degree of asset specificity and the size of the surplus relative to it. Investor owned firms are more efficient as asset specificity becomes more pronounced on the processing side, but a larger surplus will still mean that a cooperative is efficient for higher levels of relative asset specificity. However, their analysis focuses on a bilateral bargaining game that relies on farmers' bargaining power being sufficiently strong — there may be scope for processors to weaken a coalition of farmers who also have sunk assets in the supply chain.

The extent to which exploitative behavior can occur will also depend on the nature of the production and the degree of imperfect competition in the market. For a highly perishable product, the appropriate 'quasi surplus' in the hold-up problem is really the value of the raw input to the processor, less the opportunity cost of the farmer's product. A highly perishable good that has already been harvested has little value unless it is transferred immediately into the supply chain; thus the potential size of the quasi surplus is large. The highly perishable nature of agricultural production has often been cited as justification for the claim that farmers have a weak bargaining position. However, as Staatz (1987b)

### The hold-up problem (from Hendriske and Veerman, 2001)

Suppose a farmer considers producing a crop that has a total investment cost of \$40, of which \$20 is a fixed (sunk) cost. A processor is willing to pay \$50 for the crop as a raw input into his production, so a surplus of \$10 is possible, which can be shared between the two agents in the transaction, the farmer and the processor.

A deal may be struck in an *ex ante* situation where the processor agrees to share the surplus equally with the farmer. Thus, the farmer stands to receive a price of \$45, and a surplus of \$5, hence will make the investment. However, in the *ex post* situation, when the farmer has made the investment and produced the product, the processor may renege on the *ex ante* deal and try to extract a greater surplus. The amount of rent that is available *ex post* is the sum of the original surplus (\$10) plus the value of the fixed investment (as this has no market value outside the transaction), thus the surplus is \$30. If the processor offers the same share (50%) of the *ex post* surplus, the farmer loses \$5 from the transaction. If the farmer anticipates that such behaviour will occur then he is unlikely to make the investment. The sequence of the game is shown in Figure 1.

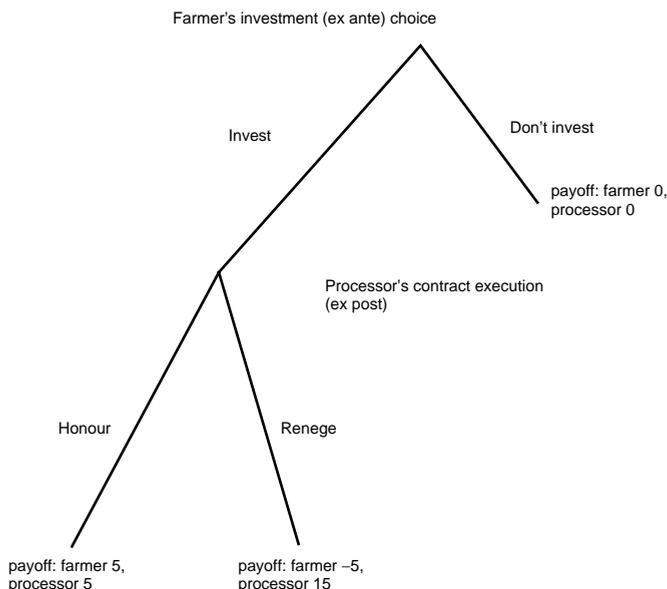


Figure 1. Payoffs from investment and contract execution decisions

notes, the extent to which exploitative behavior would continue in a repeated transaction will be tempered by the need to maintain a raw input supply (farmers need to at least recover seasonable variable costs) and the threat of entry of alternative marketing channels. Similarly, the degree to which exploitative behavior over farmers sunk long-term costs would continue will depend on the degree of competition and, in particular, the strength of the processor's spatial monopoly.

The presence of sunk costs in both the processing and farming sectors may explain much of the 'economic niche' of the new generation cooperatives in North America. For example, Staatz (1987a) argues

that one of the potential advantages of decision making in cooperatives, is that decision making takes account of the fixed or sunk costs of patrons. They are more interested in guaranteeing a market for the patrons and may accept a lower return on investment in order to achieve this goal (ie in return for the non-monetary rewards of farming). Stefanson et al. (1995) cite numerous case studies where the impetus for cooperative development has been in response to 'structural adjustment issues', and has been supported by government, at least in terms of information and training, as a 'pro family farm and pro rural development' institution. In this context, some of the proposed benefits of cooperative

involvement also relate to regional income distribution (Staatz, 1987b)

There are some cases in the US where farmer cooperatives have bought out existing IOFs that were closing down operations. Staatz (1987b) considers the question “if farmers are willing to accept a lower return for a guaranteed market, why didn’t they simply renegotiate prices with the IOF?” He suggests that a lack of trust may be the explanation. For example, perhaps the farmer group refuses to believe that the IOF is in financial trouble, hence can’t distinguish between the threat of closure and opportunism. Porter and Scully (1987) claim that cooperatives are given financial incentives over and above their investor-owned counterparts, including tax breaks, interest subsidies and free advice, which may explain their ability to accept lower returns on investment.

#### *Risk and the asset specificity problem*

The theory of incomplete contracts focuses on ‘unforeseen events’ as the mechanism by which parties can renegotiate on contracts. Uncertainty in a transaction will increase the likelihood that contracts will need to be renegotiated *ex post*. However, attempts by contracting parties to renegotiate are hampered by fear of opportunism, and this implies that greater effort needs to be put into writing more complete contracts and into monitoring the behavior of contracting parties. The extent to which farmers are collectively organised, and therefore have bargaining strength in renegotiation of contracts, and the extent to which alternative market channels for the raw input are available, will influence the IOFs’ investment in more complete contract specification, thus raising transactions costs and reducing the economic surplus.

The uncertain nature of agricultural production, in terms of both quantity and quality, means that there is a large degree of risk in vertical contracting. The organisation of the supply chain affects how this risk is borne between parties, and consequently in the need for renegotiation of contracts due to unforeseen events. In many cases investor owned processing firms will write contracts with growers specifying deliver price, which places a degree of risk on the firm, as they cannot necessarily pass on this price risk to consumers because prices are more rigid in upstream markets. The contingency pricing nature of cooperatives (where prices are paid on results of sales) reduces risks at the processing end and reduces the need for renegotiation of contracts (Staatz, 1987b). The appeal of contingency pricing arrangements, from the point of view of the processor, is such that even IOFs are moving to this type

of pricing. However, according to Staatz, such arrangements may not work as well because in a cooperative the members can monitor accounts and have representatives overseeing management so there is less concern that management is acting opportunistically.

#### **Information asymmetry**

The interdependence between decisions along the supply chain means that principal-agent theory is highly relevant to the problem of supply chain management. Agency problems arise because one party (the agent) has decision making rights that affect the other person’s (the principal’s) wealth, and has an informational advantage over the principal, and the costs of monitoring their decisions are non-trivial (Sykuta and Cook, 2001). Information asymmetry, which raises the cost of transactions because of the need to design monitoring and enforcement mechanisms to overcome incentive incompatibility, can prevent development of viable agrifood sectors.

The two different types of information asymmetry are hidden information and hidden action, which generally relate to *ex ante* and *ex post* periods of contract specification.

#### **Hidden information (adverse selection)**

Hidden information problems, otherwise known as adverse selection, refer to the case where one party has an informational advantage over the other before entering into a transaction.

One of the important adverse selection problems in agrifood supply chains stems from the fact that food consumers have strong preferences for embodied attributes that are difficult to measure from visual inspection of the consumer good. For example, consumers have preferences for food safety, production technique (eg free range eggs) and are willing to pay premiums for these attributes. They are unable to assess whether these attributes are in the product they are consuming and rely on information provided to them by suppliers. There is an incentive for suppliers to lie about these attributes and claim the premium. The adverse selection problem, if not dealt with, results in a sub-optimal supply of quality because, in the absence of screening information, consumers base their willingness to pay on a probability weighted expected value — which only low-quality suppliers have the incentive to supply (Akerlof, 1970).

At the consumer end, adverse selection can be attenuated by advertising and branding; or by government intervention in the form of quality standards and licensing (Sexton, 1994). However, the provision

of product guarantees at the consumer end also requires that hidden information problems are dealt with along the length of the supply chain and this can be achieved by contracts that specify measurable quality; by advertising and branding by input suppliers; or by government intervention in licensing or quality standards in upstream processes. An important question in agricultural supply chains is the extent to which the public vs the private sector should be involved in overcoming the adverse selection problem.

From the point of view of the processor, who seeks a high quality raw product, the problem of selecting farmers with whom to contract represents another adverse selection problem. While the IOF can specify technological processes that must be followed, thus controlling for many input factors affecting product quality; they cannot control for managerial quality. It is in the interests of the IOF to seek contracts with the better farmers who are likely to be able to deliver to the quantity and quality specifications in the contract.

One of the claimed advantages of cooperatively owned processing firms is that they can overcome adverse selection problems at the farm/processor level because of a closer relationship with the farmer (eg Staatz, 1987b).

From the point of view of the farmer, hidden information may also be a problem. In particular, the farmer may have little information about market alternatives and may be unable to distinguish between different buyers in terms of their reliability in honoring the contract. Empirical work on first-handler relationships with farmers indicates that trust is very important in the selection of buyers (eg Poole et al., 1998).

Another important hidden information problem that is not mentioned in the literature on incomplete contracts, but is very relevant to agricultural supply chains, is information asymmetry at the *ex ante* investment stage, about the size of the surplus. This information asymmetry is likely to go against the farmer — it is much easier to collect information about opportunity costs of farmer involvement than it is to collect information about the cost structure of a large complex firm. Thus, there is potential for opportunism at the investment/contracting stage, as the IOF has the incentive to hide the size of the surplus and only offer the farmer a raw input price just above the opportunity cost. This potential opportunism could be overcome by cooperative investment downstream in the supply chain.

### **Hidden action (moral hazard)**

Hidden action problems arise in a post-contracting situation, where there is an incentive for the agent to

cheat on the deal that has been struck. Such cheating could be undertaken by the farmer, eg by using inferior (cheaper) inputs to production or not following specified production protocols aimed at providing the processor with the desired quality of raw materials.

IOFs that take on the role of input supply to producers increase their exposure to the risk of moral hazard (Royer, 1995). Babb (1992) says that contract cancellation is a bigger risk for processors/lenders than for producers, who can continue as independent. However, their ability to do this will depend on opportunities in other markets, which define the degree of spatial monopoly of the IOF. Firms with a larger spatial monopoly essentially have a captive market and the risk of contract cancellation is diminished.

### **IOFs vs cooperatives in information asymmetry problems**

Skyuta and Cook (2001) discuss how the organisational structure (IOF vs cooperatives) can affect information asymmetry and hence coordination and contracting. For example, in the IOF structure there is no inherent interest in the welfare of producers, and thus there is an incentive to withhold information on both sides. This is said to create an element of distrust that is greater than in a cooperative structure. They argue that the producer orientation of cooperatives leads to a greater sense of trust, because producers are involved in the governance of the organisation with which the farmers are trading. The implication of these different degrees of trust is that IOF contracts must be more transparent and easily verified; more likely to involve third parties; and more complete. Thus, the transactions costs of a cooperative processing firm are likely to be much lower than those of an IOF. However, the extent to which this trust benefit of cooperatives is realized will depend on the governance of the cooperative. Larger, more heterogeneous cooperatives with conflicting interest groups may not be able to invoke trust.

Staatz (1987a) argues that cooperatives may be more effective than IOFs in vertical contracting because members who do not comply with a cooperative not only get the same incentives as IOFs for non compliance, but also face local monitoring and social sanctions if they let the team down. The ability to use peer pressure and local monitoring to reduce transactions costs is well established in the literature on common property. However, this benefit does not necessarily justify the involvement of cooperative groups in the processing sector. An alternative institutional arrangement is to use a

cooperative to represent farmers contracting with IOFs. Indeed, multinational companies dealing with small farmers often negotiate through social hierarchies (such as village governance) to overcome adverse selection, moral hazard and to reduce the costs of negotiation.

The principal agent problems arise because there is an incomplete separation of property and decision rights, and this can create a need to monitor the agent's performance. An alternative solution is to align decision makers' incentives, giving them access to residual claims where their inputs have a greater influence on economic value of the production process (Fulton, 1995). For example, in farming, if labour is the most variable input, labour should rent land and have the residual claim, thus giving an incentive to work hard. If land quality is the main factor affecting production then land owners should hire labour at a fixed rate and have the incentive to invest in and manage the land to maximise its quality attributes. Using this argument Fulton claims that marketing cooperatives are the most likely to form in supply chains where there is a greater degree of uncertainty in production at the farm level, because in this case it makes sense for raw input suppliers to have the residual claim at the processing stage, as it will give them an incentive to produce better quality. He also argues that as agriculture becomes more industrialised, the uncertainty issue at the farm end is reduced, so it is possible to contract farmers at a fixed price for their raw input supply.

Compared to IOFs, cooperative management will generally have better information about the production characteristics at the farm level. To achieve more control over product quality, contracts between farmers and processors usually specify technological processes that must be followed. Royer (1995) suggests that these technical directives will be better designed in the case of cooperative processing firms,

because of the informational advantage of having farmers on the board of management.

### NIE and justification for cooperatives

The literature reviewed above has focused on the potential for marketing cooperatives to provide an alternative to IOFs through downstream investment in marketing or processing services. These arguments are summarised in Table 1. As stated by Royer (1995), much of the literature advocating the benefits of cooperative ownership are actually benefits of vertical coordination, which can also be achieved directly by IOFs taking out contracts with farmers. Other solutions to the problems raised in the literature can also be found by considering alternative relationships between investor-owned firms and collective groups. Public sector participation can also assist in reducing transactions costs and providing better supply chain arrangements. Some of the alternative solutions are noted in the table.

### Issues in the management and efficiency of cooperatives

The four basic characteristics of cooperative firms that affect their management and efficiency compared to investor-owned firms are:

1. Fixed return on capital
2. Residual claims awarded to farmer members through patronage (sales to the cooperative in the case of agricultural marketing)
3. Democratic governance (one member-one vote and restrictions on non-member voting).
4. Management overseen by a board of elected members

These characteristics lead to a number of issues, including difficulties in raising capital and in governing the cooperative. In addition to these problems, the usual weaknesses inherent in coalitions with

**Table 1.** Justifications for cooperative ownership of downstream facilities

Problem	Benefits of cooperative ownership of facilities	Alternatives
Asset specificity	Common objective, hence less fear of opportunism	Collective bargaining can increase <i>ex post</i> bargaining power Improve contracting laws
Information asymmetry	Common objective, hence more trust and reduced transaction costs Peer group monitoring reduces transaction costs Better decisions due to better communication between stages of supply chain	<ul style="list-style-type: none"> <li>• Can be achieved by cooperative bargaining groups contracting with IOFs</li> <li>• Must be weighed against control problems (below)</li> </ul>
Information about the size of the surplus	All surplus belongs to farmers	<ul style="list-style-type: none"> <li>• Public information to assist farmers/collective bargaining groups in negotiation</li> </ul>

heterogeneous members also affect decision making and performance. Cook (1995) argues that these weaknesses cause the demise of most cooperatives, unless action is taken to solve them by redesigning property rights. The 'new generation cooperatives' in North America overcome some of the inherent weaknesses of cooperatives. These weaknesses are discussed below:

### Capital and investment issues

Cooperatives have traditionally been financed by capital contributions from members, where these capital contributions effectively amount to a loan to the cooperative. That is, members earn a return on capital invested according to a fixed (regulated) interest rate, and usually redeem this equity on a revolving repayments principle (Porter and Scully, 1987). Company profits are returned to members in proportion to patronage and usually there are no rules that link capital contributions to patronage. Thus, there is an incentive for cooperative members to minimise their capital contribution and increase the patronage relative to that investment (Staatz, 1987a). These factors imply that it is difficult to raise capital from membership contributions (Levy, 1983; Vitaliano, 1983; Porter and Scully, 1987).

Because profits are returned on the basis of patronage, cooperative membership is only beneficial for active members. This gives rise to what is called the 'horizon problem' in cooperative decision making (Vitaliano, 1983; Cook, 1995). Those shareholders who are nearing retirement will discount the benefits of investment by the cooperatives, and will pressure for a larger repayment of current profits as dividends, compared to retained earnings for investment. The pressure from these members will further exacerbate difficulties in financing long-term investment projects. This problem is most severe in cooperatives where large, long-term capital investments are needed, such as processing technologies where there are significant economies of scale, or where investment in R&D for technical innovation is important.

Open cooperatives also suffer from 'free rider' problems that further reduce investment incentives. New members are only required to invest equity according to a prescribed formula, rather than paying in proportion to the value of benefits they receive, which are the benefits of patronage (Cook and Iliopoulos, 2000). There are also free rider problems in the maintenance of throughput for the cooperative. Cooperatives may rely on farmer loyalty to maintain throughput and achieve economies of scale, whereas open membership policies can result in farmers defecting to other buyers if prices are temporarily

better. While short-term decisions about patronage affect the long-term viability of the cooperative, and hence expected future prices if the cooperative has been providing competitive pressure, the member does not take the marginal effect of his patronage decision into consideration (Staatz, 1987a).

The problem of raising capital can imply that the cooperative has to rely more on debt financing as a means of making capital investments. However, Vitaliano (1983) notes that cooperatives may have special problems in obtaining such loans, because it is more difficult for lending agencies to monitor the performance of these agencies. For example, they may be restricted from sitting on boards of directors. Moreover, because residual claims are not marketed, lenders may require higher risk premiums. These problems have been circumvented in the US by government involvement in creating specialist banks that lend to cooperatives.

Some of the problems associated with capital investment of cooperatives can be overcome in special cases. For example, in communities with a strong tradition of family farming the horizon problem may be overcome because the older members may take into account the effect of investment on the patronage benefits accruing to their heirs (Staatz, 1987a). However, in most cases it is necessary to formally strengthen the property rights issues inherent in traditional cooperatives, in order to improve equity and investment choices. The so-called new generation cooperatives do this by aligning membership and capital contribution to patronage.

One example is the sale of 'delivery rights' to cooperative processing firms, which specify a quantity that can be delivered. This strategy achieves a closed membership and a secondary market of delivery rights (Stefanson et al., 1995). Toegerson (2001) notes that some authors have criticised such practices (as contravening cooperative principles) for this restrictive membership policy (ie not helping all). In the longer term, such 'privatisation' of cooperatives may lead to reduced public assistance for cooperatives.

Cook and Iliopoulos (2000) provide evidence on the importance of stronger property rights on the equity of cooperatives. They conducted an empirical analysis of 127 marketing cooperatives in the US (representing 75% of cooperative sales in 1996), analysing the level of equity as a function of property rights parameters. They showed that marketing cooperatives with closed memberships, marketing agreements, and transferable delivery rights had significantly higher levels of member investment and higher total equity, compared to other cooperatives.

## Control

Cooperatives are managed by a specialised management team who are employees of the organisation, overseen by the board who are elected from the group of member-patrons. Management decisions about the organisation are meant to take into account the effect of those decisions on its patrons. The extent to which this is achieved depends on the strength of the board of management. A more active board will ensure that members' interests are accounted for, but an overactive board may interfere with the manager's job and make it difficult for the manager to run the business efficiently (Levay 1983). Vitaliano (1983) argues that the manager's alignment to members' interest will also be controlled by the extent of competition in the market — the manager may have to compete for patronage, in which case members will be better served.

A number of authors compare the mechanisms available for control management in cooperatives and investor-owned firms, which relate to equity arrangements (eg Vitaliano, 1983; Porter and Scully, 1987; Staatz, 1987a). In an IOF stockholders can immediately sell stock and move elsewhere if they do not like management. The marketability of equity shares means that managers receive clear price signals on the implications of their decisions on expected future profits. In contrast, members of a cooperative cannot provide the same market signals — this is one of the reasons why boards representing members need to play a greater role in monitoring management.

The high degree of involvement by the board has a number of implications. First, the cooperative management style has higher decision-making costs (Staatz, 1987a). Second, the skills of the board of management usually relate to the farming activity, not the downstream activity, in which the cooperative is involved. Vitaliano (1983) suggests that this is a fundamental flaw in the organisational structure — cooperative board members are expected to make decisions about matters that exceed their qualifications and experience. King (1995) suggests that the residual claims argument proposed by Fulton (1995) missed one of the most important issues — good management, which is the most variable and difficult to monitor component of production. He suggests that the cooperative structure is more limited in granting equity to the manager, which would otherwise provide an incentive for better management.

An additional feature of the influence of the board on decision making in the cooperative is that managers are constrained in their investment decisions according to the interests of members. This means that these firms are less likely to integrate into unrelated activities or into products that compete with

members' products; and more likely to try to expand markets of members' products (Schafer, 1987; Rhodes, 1983).

Most of the discussion about the effect of management problems on the performance of cooperatives has been conjecture but Porter and Scully (1987) provide empirical evidence to support the claim that cooperatives are less efficient than their investor-owned counterparts. Based on a cross-sectional study of milk processing firms in the US, they used frontier analysis to examine the efficiency of cooperatives, and found that they were only 75% as efficient as propriety counterparts. Average production costs are higher due to technical inefficiency and loss of scale. They argue that it is tax breaks, interest subsidies and free services from departments of agriculture that help to compensate them for their less efficient operations. However, they also noted that cooperatives may provide services to farmers that were not included in the analysis (although costs were accounted for).

## Membership heterogeneity

Formal models of incentives for collusion/entry into a cooperative have been developed by Staatz (1983). He demonstrated the generalities that are typical of cooperative game results — that the greater the member heterogeneity, the harder it is for cooperatives to keep and maintain memberships, and that gains need to be large enough and distributed in such a way that will ensure benefits of cohesion rather than defection.

One of the roles of the board of management is to ensure that members' interests are represented to management, and the democratic nature of cooperatives means that the concerns of all investors should be considered. In reality, coalitions will form that lobby board members, and this may serve to maintain some cohesion, in the sense that those with a greater threat will have a greater influence. However, the cost of coalition building raises the transactions costs of management (Staatz, 1987a).

In order to maintain cohesion in the cooperative, the cooperative's board of management needs to become involved in pricing and dividend payment policies, more than boards of IOFs would (Royer, 1995). However, while differential pricing may be necessary to ensure stability, it may be difficult to achieve such policies because of the one member-one vote rule. Staatz (1987a) claims that the problems of cohesion are partly attenuated by uncertainty about what is in ones best interest.

Member heterogeneity, as expressed through the board of management, also affects investment decisions. Some of these problems were dealt with in the

discussion on the 'horizon' problem associated with raising equity for investment. Large multi-product cooperatives will also be constrained in making investment decisions that favour some products but not others.

Another claimed advantage of cooperatives is that price pooling can reduce risk to farmers. However, if members are heterogeneous, pooling can end up being a cross subsidy between producers of differentiated product, which results in inefficient price signals to growers. Also, the income transfers associated with pooling across differentiated products are likely to cause conflict. In recent years, the redefinition of more narrow pooling arrangements has been the trend to overcome these problems (Statz, 1987a). He also observes that in the US, pooling is more prevalent among fruit and vegetables where highly perishable (hence naturally volatile) markets prevail, compared to grain and livestock producers where markets are more stable. However, the fact that this latter group also have market mechanisms for dealing with risk might also be a factor influencing this difference.

### **Developing country context: can marketing cooperatives serve a role?**

The literature reviewed in the previous section focused on agricultural marketing cooperatives in developed countries. The main generalities emerging from the review are that cooperatives have numerous problems associated with management, but these can be minimised by keeping them small and homogeneous; or by defining appropriate property rights to membership; or generally by designing them to be more like an IOF. Some of the potential benefits of a cooperative marketing structure relate to the greater degree of trust involved in the transaction, which may improve communication and reduce transactions costs relative to an IOF. However, most of the discussion in the literature has been conjecture; there is little empirical evidence to support the claim that cooperatives ownership *vis á vis* IOF ownership reduces transactions cost (with the exception of Porter and Scullys' empirical condemnation of the efficiency of cooperatives). Moreover, much of the proposed benefits of reduced transactions costs could also be achieved by bargaining cooperatives that represent the farmer in supply chain negotiations. Downstream asset ownership is not the only way forward.

Developing country farmers seeking to gain a greater return from agricultural produce by investing in downstream operations will face similar problems to those encountered in developed countries, as well as additional problems.

### **Capital problems**

The prospect of farmer investment in downstream areas of the supply chain in developing countries is dim, given the severe capital constraints under which farmers operate. It is unlikely that sufficient capital could be raised internally to finance investment in a processing sector that exhibits economies of scale (Zhu and Apedaile, 1998). Whether such investments could be financed by government or donors would need to be viewed in the context of the opportunity cost of public funds which could arguably be better spent supplying public goods.

Even for smaller-scale investments, capital issues are likely to be a major problem. For example, even extending ownership of the commodity further down the marketing chain by investing in first handler services, will require that the farmer delays payment for his product, which may be impossible given the tight cash-flow position of most smallholder farming operations. These issues will arise even if all the equity issues of traditional cooperatives are dealt with by creating appropriate property rights structures, at least for capital constrained smallholders.

The problems of investing in high technology agrifood chains in developing countries are further exacerbated by underlying inadequacies, that require a significant amount of capital to correct, as discussed below.

### **Overseeing management**

A major issue associated with cooperative businesses is the adequacy of management, and its oversight by boards of management. Where farmers have little knowledge about downstream processes, and limited marketing experience beyond traditional first-handler channels, management will suffer from inexperienced leadership. While this might be mitigated by providing public education services, by donors or government, such expenditure would need to be weighed against its high opportunity cost. If funding is to be spent on training it may go further by focusing on training farmer cooperatives in negotiating with IOFs, rather than training them to replace IOFs.

### **Transactions costs of contracting and negotiation**

A major issue in vertical coordination of agrifood chains in developing countries is the small size of holdings, which makes the cost of negotiating with individual farmers and monitoring and enforcing contracts prohibitively costly. Collective action, which provides an efficient solution to this problem, is already being used by firms that contract with

farmers in developing countries. Coulter *et al.* report on the involvement of small group cooperatives in linking smallholders to IOFs in Africa. Cooperatives provide self-monitoring benefits that reduce the risk of default and work in the same way as rural credit cooperatives; ie peer monitoring is cheap and effective because default of an individual affects the entire group. For the same reason, cooperatives assist in self selecting groups of farmers who are likely to meet the terms of the group's contract. At the same time, the IOF's costs of negotiation are reduced by conducting all transactions through the cooperative.

### Other issues

The NIE theories on vertical coordination are useful tools for considering agricultural supply chain issues, and are relevant to the developing country context. However, the existing literature has not covered the effect of prevailing institutions on the merits of cooperatives and other marketing alternatives. For example, the theory of incomplete contracts focuses on 'uncertainty' being very important as that is how contracts are breached. But contracts are only as good as the legal system that enforces them. In some developing countries there may be scope for opportunistic behavior even in the best written contracts, due to poor contract enforcement.

Hubbard (1997) discusses the problem of weak or hostile prevailing institutions in developing countries, and observes that it can lead to the emergence of a bimodal industry structure, consisting of a small number of large integrated firms targeting the export sector, and an informal sector of smallholders and small-scale processors. Because of the enormous investment required for overcoming the 'missing markets' and 'missing public goods' in the sector, the small-scale sector experiences enormous barriers to growth. Small-scale farmer cooperatives are likely to face similar barriers to growth. Some of the institutional barriers that need to be overcome are: weak contracting law enforcement; weak public infrastructure to support agricultural markets (eg ports, roads); weak public services to support quality control such as certification; greater degree of information asymmetry due to low education level and poor communication; and poorly functioning factor markets.

These issues may have a greater bearing on the 'hold-up' problems associated with investment in value adding supply chain investments, than does the ownership structure of downstream elements in the supply chain.

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# Cooperatives in Asia: when does intervention become an option?

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## Introduction

THERE has been much discussion in developing countries about the ability of agricultural cooperatives to minimise the exploitation of small farmers by various market intermediaries (Lele, 1981). In most developing countries, the agricultural marketing system is characterised by a highly atomistic production side (where there are many small, widely-dispersed farmers growing perishable crops) and an oligopolistic marketing system (where there are only a few traders) (Mendoza and Rosegrant, 1995). Marketing costs are high because of an inefficient transport system, inadequate cool storage capacity and significant variations in product form, variety and quality (Harris-White, 1995). The supply chain itself is often long and protracted, involving a large number of market intermediaries (Lele, 1981). Furthermore, information and locational factors potentially limit the number of intermediaries available to transact with primary producers (Pomeroy and Trinidad, 1995). In other instances, various credit arrangements may lock farmers into long-term business-to-business relationships where the farmer is, to varying degrees, more or less dependent upon the market intermediary (Mendoza and Rosegrant, 1995).

While the introduction of agricultural cooperatives is often perceived to be an effective means of providing farmers with some countervailing market power, there is increasing evidence that most attempts to intervene in the market have failed. Without first seeking to improve the physical infrastructure, the flow of market information, technical advice and capital, or to introduce appropriate pricing policies, quality standards and to upgrade the regulatory institutions, there is not only a greater chance of failure, but a greater possibility that any benefits derived from cooperative marketing will be disproportionately allocated to those who have the highest social status and most political power (Lele, 1981). With little or no access to education, most small farmers are unable to participate meaningfully

in any organisation dealing with complex development functions such as management, marketing or finance.

There is also a growing recognition that economic exchange is embedded within various overarching social institutions including locality, class, ethnicity, religion, gender and age (Zucker, 1986; Fukuyama, 1995; Harris-White, 1997). The importance of trust and social capital as a means of reducing risk and facilitating exchange is being increasingly recognised when producers and market intermediaries have limited access to the legal system as a means for redress (Mendoza and Rosegrant, 1995; Fafchamps, 1996; Humphrey and Schmitz, 1998).

Using three alternative methods of evaluation, this paper seeks to examine the efficiency of the marketing system for fresh potatoes in the Red River Delta (Vietnam). It is proposed that before any intervention is contemplated, the supply chain must be examined to identify the marketing margins extracted by the various market intermediaries, the extent to which suppliers are able to fulfil the needs of their downstream customers, the constraints that adversely affect the suppliers' ability to meet customers' needs and the nature of the long-term relationships that exist between suppliers and their customers.

## Analysing performance in marketing channels

Developed primarily by Williamson (1979, 1985), transaction cost theory assumes that various costs are associated with an exchange. These costs are comprised of the costs of obtaining and processing information, negotiating contracts, monitoring agents and enforcing contracts. These costs may become significant in the presence of information asymmetry, uncertainty and transaction specific investments.

Although there are several different approaches for measuring transaction costs, the market is said to be

efficient if the price consumers ultimately pay adequately reflects storage costs, transportation costs and differences in price due to product form (Harris-White, 1995). Since price data is usually the most readily available and most reliable source of market information in developing countries (Goletti and Christina-Tsigas, 1995), the performance of the supply chain is most often evaluated using price margins. However, a large marketing margin may result in little or no profit for a player in the market and may even result in a trading loss, depending on the buying and selling prices and the costs of marketing (Mendoza, 1995). Marketing margins will also fluctuate due to the perishability of the product, the number of people involved in the exchange, the marketing services provided and the risk and uncertainty borne by each one (Pomeroy and Trinidad, 1995).

Using the concept of market structure, conduct and performance, market concentration is a strong indicator of non-competitive pricing behaviour and of inefficient market performance (Mendoza and Rosegrant, 1995). Ordinarily, the presence of a few large market agents within the market is sufficient evidence of market power and price collusion. However, in order to verify the extent to which various actors have been exploited by unfair trading practices, the net returns and the marketing margins at each step in the supply chain must be estimated (Pomeroy and Trinidad, 1995).

Industrial purchasing theory suggests that customers will seek to purchase goods from those producers who are the best able to deliver the desired quantity, within predetermined quality specifications, on time, at an agreed price (Monzcka et al., 1998).

In describing a supplier's offer quality, Gronroos (1990) finds it necessary to differentiate between technical quality and functional quality. Technical quality describes the customer's specifications. This is a physical description of the product in terms of its size; shape; colour; freedom from pests and diseases; purity (in terms of its freedom from chemical contaminants, pathogenic organisms and genetically modified plants); maturity or freshness; and the manner in which the product is packed.

Functional quality describes the way a supplier goes about delivering the product to the customer. While this fundamentally means being able to deliver the product when the customer wants it, by implication, it involves many inter-related activities such as production scheduling, storage and warehousing, logistics, ordering and invoicing. Since most market intermediaries purchase products in the expectation that they will be able to resell them, the timely and efficient receipt of goods is critical to the success of most downstream manufacturing

and retail operations. For this reason, many customers prefer to purchase from local suppliers. Local suppliers are generally less expensive and more dependable than those located at a distance (Hakansson and Wootz, 1975). Delivery may be more prompt because the distance is shorter and there is less likelihood of transportation delays. However, more importantly, local suppliers gain greater knowledge of their customers' needs and may be more flexible in responding to their requirements (Leenders and Fearon, 1993).

More recently, Parasuraman (1998) has introduced a third dimension called service quality, which describes the extra things a supplier is willing to do to retain the customer's business. While the exact meaning of the term service varies with the nature of the product and the requirements of the buying organisation, it may include such variables as providing technical assistance, innovative suggestions, credit arrangements, support for special needs, or providing advance notice of impending price changes or shortages in supply (Hutt and Speh, 1995).

In measuring the extent to which suppliers are able to meet the needs of their customers, Parasuraman, et al. (1985), proposed the concept of a service gap, which is a measure of how well the service level delivered by a supplier matches customers' expectations. An integral part of this analysis is concerned with the identification of the various constraints that prevent the supplier from fulfilling the customer's needs. It is only after these constraints have been identified that suppliers can improve their performance.

Traditionally, in order to cut costs, customers have gone out of their way to identify the cheapest supplier (Monczka et al., 1998). The traditional approach to purchasing required the buyer to take three or more bids, then to play one supplier off against another until they got the lowest price. Since this approach relied primarily on the use of short-term contracts, it led to what can best be described as an adversarial relationship. Both customers and suppliers sought to extract as much as they could from the transaction, knowing that at any time, if either party found a better deal, the contract would be cancelled. However, such short-term opportunism stifles innovation and provides few incentives to invest in productivity improvements or new technology. Technology is the source of and the reason for interaction between firms (Thomas and Ford, 1995). Since technology may substantially alter the value chain and the way the value chains are linked, strong mutual interdependencies arise, so that the level of technology in one firm will influence the product and process technologies of its partner. As a

result, a firm's unique market position, power and competitive advantage are created through its interactions with suppliers, customers and other third parties.

With increasing turbulence and greater uncertainty in the market, more firms are moving away from transaction orientated marketing strategies towards relationship marketing for enhanced performance (Noordeweir et al., 1990). More industrial firms are realising that customer retention is more cost effective than customer creation (Han et al., 1993; Kalwani and Narayandas, 1995; Achrol, 1997).

Firms are establishing relationships with their suppliers because it enables them to be more efficient and more effective (Anderson and Narus, 1990; Kalwani and Narayandas, 1995; Sheth and Sharma, 1997). By developing relationships with their suppliers, buyers and sellers can achieve cost savings through: reduced search and evaluation costs (Hakansson, 1982); reduced transaction costs (Arndt, 1979; Hakansson, 1982; Han et al., 1993); and the learning effects and relationship specific scale economies (Arndt, 1979; Cunningham and Homse, 1982; Gundlach et al., 1995). However, the primary reason for establishing relationships with suppliers is that customers realise that suppliers create value (Evans and Laskin, 1994; Morgan and Hunt, 1994; Kalwani and Narayandas, 1995; Wilson, 1995). Developing long-term relationships can improve access to markets and reliable market information (Low, 1996); customers can anticipate improved access to a more reliable supply of production inputs (Arndt, 1979; Hakansson, 1982); improved product quality and performance (Han et al., 1993); and a higher level of technical interaction in the form of information exchange, potential product adaptations and technical assistance (Cunningham and Homse, 1982).

By becoming closer to customers and better understanding and satisfying their needs, suppliers can achieve greater customer loyalty and higher repeat sales (Evans and Laskin, 1994; Lohtia and Krapfel, 1994; Kalwani and Narayandas, 1995). Relationship marketing provides a stronger, longer-term customer benefit that is more difficult for competitors to match and it becomes more difficult for competitors to enter the market (Hakansson, 1982; Turnbull and Wilson, 1989; Heide, 1994). Buyers become less sensitive to price competition and suppliers may even benefit from higher prices (Kalwani and Narayandas, 1995). Suppliers benefit from being able to better plan and forecast production schedules (Lohtia and Krapfel, 1994), coordinate deliveries and to undertake joint promotions (Easton and Araujo, 1994). However, the greatest benefit arising from long-term relationships is the reduction in uncer-

tainty (Arndt, 1979; Hakansson, 1982; Noordeweir et al., 1990).

While much has been written about the development and maintenance of long-term buyer-seller relationships, the greatest support has emerged for the key constructs of satisfaction, trust and commitment (Anderson and Narus, 1990; Anderson and Weitz, 1992; Han et al., 1993; Morgan and Hunt, 1994).

Satisfying customer needs lies at the very foundation of modern marketing thought. Satisfaction is derived from the result of a comparison between the preferred supplier's performance and the customer's expectations (Fornell, 1992). Whenever performance exceeds expectations, satisfaction will increase, but when it falls below expectations, customers will become dissatisfied.

Since satisfaction is defined as a positive affective state resulting from an appraisal of all aspects of one firm's working relationship with another (Frazier et al., 1989), Geyskens et al. (1999) propose that satisfaction should capture both the economic and non-economic (social) aspects of the exchange. Economic satisfaction is defined as the channel member's positive affective response to the economic rewards that flow from the relationship with its partner. An economically satisfied channel member considers the relationship a success when they are satisfied with the effectiveness and productivity of the relationship with their partner and the resulting financial outcomes. Channel members who are satisfied with the economic rewards that flow from their relationship may attribute a great deal of credit to their partner and the channel members' attraction to and trust in their partner will increase. Mackenzie and Hardy (1996) propose that as satisfaction increases so also will trust.

For any particular potential exchange, trust will be critical if two situational factors are present; risk and incomplete buyer information (Hawes et al., 1989). Since most sales transactions present some degree of risk and uncertainty to the potential buyer, without a degree of trust, the perceived risk may be too great for the transaction to occur. More specifically, trust becomes important whenever there is a high level of performance ambiguity and poor product performance will have a significant adverse impact on the value derived by the buyer (Singh and Sirdeshmukh, 2000). In such circumstances, trust acts as an information resource that directly reduces the perceived threat of information asymmetry and performance ambiguity.

However, trust also relates to the focal firm's intention to rely upon their exchange partner. Ganesan (1994) describes this component as benevolence, because it is based on the extent to which the

focal firm believes that its partner has intentions and motives beneficial to it. A benevolent partner will subordinate immediate self-interest for the long-term benefit of both parties and will not take actions that may have a negative impact on the firm. Singh and Sirdeshmukh (2000) describe trust as a belief that an exchange partner will act in a manner that is responsible, with integrity and without injury to the focal firm.

In building trust, Sako (1992) finds it necessary to differentiate between trust at three levels. Contractual trust is an expectation that the exchange partner will abide by its written or oral contractual obligations and act according to generally accepted business practice. Competence trust is derived from the assumption that the entrusted firm will carry out the activities competently and reliably. Goodwill trust arises where both parties have developed mutual expectations that the other will do more than what it is formally committed to perform. Here, the firm not only expects the other not to act opportunistically, but that it will, altruistically, go out of its way to help (McCutcheon and Stuart, 2000).

Opportunism refers to the incomplete or distorted disclosure of information, especially calculated efforts to mislead, distort, disguise, obfuscate or otherwise confuse (Williamson, 1985). The incentive to engage in opportunistic behaviour arises because one party finds it advantageous to maximise their own gains at the expense of the relationship (Parke, 1993). However, should either party choose to behave opportunistically, it is likely to provoke retaliatory behaviour (Gundlach et al., 1995). Opportunism begets opportunism. With trust and confidence in the relationship undermined, the aggrieved party will seek to withdraw or to limit their commitment to the relationship. Furthermore, developing a reputation as a selfish, exploitative and unreliable exchange partner will decrease the likelihood of participating in future relationships. Most firms will avoid entering into exchange relationships with those firms who are perceived to have a questionable reputation (Parke, 1993). Committing only to reputable, trustworthy partners reduces the risk of being mistreated (Anderson and Weitz, 1992; Ganesan, 1994).

When the outcomes obtained from the relationship are important or highly valued; when they are better than the outcomes available from alternative suppliers; and when fewer alternative sources of exchange are available to the firm, dependence is said to increase (Heide and John, 1988). With greater dependence comes greater vulnerability, for the more powerful exchange partner may be in a position to create more favourable terms of trade for itself.

Whenever a channel member controls resources that another channel member needs, various power relations emerge that potentially enable the party controlling those resources to exert some influence or power (Andaleeb, 1996). Since this may include access to markets or access to capital, farmers are often dependent upon their trading partners (Tagarino et al., 1998).

Dependence is also increased when the outcomes available from the relationship are comparatively better than the outcomes available from alternative relationships. Firms dealing with the best trader are more dependent because the outcomes associated from dealing with that trader are better than those available from alternative traders. In this context, dependence is a measure of the overall quality of the outcomes available to the focal firm from the best alternative exchange relationship (Anderson and Narus, 1990).

When fewer alternative sources of exchange are available to the focal firm, or when replacing or substituting a current exchange partner is difficult because there are fewer potential alternatives, dependence increases (Heide and John, 1988; Frazier et al., 1989). In general, firms will seek to reduce their dependence on other firms and to increase the dependence of other firms upon themselves (Lohtia and Krapfel, 1994). Firms may either seek to reduce and manage dependence by purposely structuring their exchange relationships with other firms (Heide, 1994), or to deal with multiple entities (Ganesan, 1994). Where there are many alternatives, the need to interact is reduced, but as the number of alternative exchange partners declines, the need to interact will increase (Andaleeb, 1996).

## Background

Potatoes have been cultivated in Vietnam since 1890 when they were first introduced by the French colonialists. In 1980, Vietnam was the largest producer of potatoes in Southeast Asia with more than 100,000 hectares under cultivation (Schmiediche, 1995). However, in the absence of a reliable supply of good quality seed, productivity per hectare declined and the area of potatoes cultivated subsequently decreased. Today, some 35,000 hectares of potatoes are cultivated in Vietnam, primarily in the Red River Delta (Tung and Ho, 1995).

Potatoes are the second most important crop in the Red River Delta and, understandably, are a priority crop for development by the government. Potatoes are an alternative food crop to rice, capable of feeding an expanding population and providing both a valuable source of nutrition and a valuable source of income for many impoverished rural families.

The majority of potato farmers in the Red River Delta are very small family enterprises, cultivating fewer than 0.15 hectares of potatoes. Most farmers plant potatoes in either October or November and harvest their crops in January. With such a short cropping season, inclement overcast weather during most of the growing season, poor quality seed, soil compaction and the inappropriate use of chemicals and fertilisers, the average yield in the Red River Delta is just 16.7 tonnes per hectare (Batt, 2002).

For most potato farmers in the Red River Delta, collector agents and traders provide the major mechanism for the disposal of the potato crop. However, traders purchase only the large and extra large tubers; farmers generally retain some proportion of the medium sized tubers for seed and the small tubers are primarily used for stock food. Not unexpectedly, the price farmers receive for the potatoes they have harvested is dependent upon supply and demand and tuber size. As potatoes provide the majority of on-farm income for most farm households in the Red River Delta, any reduction in the prices received will have an adverse impact on the household. With 88% of potato farmers earning less than US\$67 per month (Batt, 2002), most farm households in the Red River Delta are severely cash constrained.

The function of the various traders is to collect the potatoes from the farmer's property and to transport and deliver the tubers to wholesalers in the major metropolitan centres throughout Vietnam. The majority of traders are also small enterprises, with most purchasing fewer than 1500 kg of vegetables per week. However, during the potato season, there is a marked increase in the quantity of product purchased, with most traders handling more than 10 tonnes of potatoes per week (Batt, 2002).

In some potato-growing districts, collector agents provide an intermediary function. It is the function of the collector agent to aggregate potatoes from a number of small farmers, to pay the farmers, and to store the potatoes until the traders come to collect them. Quite clearly, by aggregating the tubers in one place, the traders do not have to travel to as many farmers to fill their trucks. In most cases, the collector agents are potato farmers themselves.

The wholesale enterprises are significantly larger than the traders, with most handling in excess of 5000 kg of fresh vegetables per week. Wholesalers deal with traders and collector agents rather than farmers, as traders and collector agents are more able to provide tubers of the desired variety in the required quantity and desired size. Traders and collector agents offer a more competitive price and are able to deliver the potatoes when the wholesalers require them (Batt, 2002).

Wholesalers operate in the supply chain as market intermediaries, but unlike traders and collector agents whose function it is to source potatoes from many small farmers and to aggregate them into larger quantities, wholesalers break the consignment down into quantities sufficient to meet the needs of retail customers and the food service sector. For the wholesalers in Hanoi, the main customers are the food service industries (51% of sales) (Batt, 2002).

Excluding sales to the food service sector and processing industries, retailers provide the final link with household buyers in the supply chain for fresh potatoes. However, the scale of retail operations has been found to vary enormously between rural and metropolitan areas and between and within the major metropolitan cities. Businesses range in size from those selling fewer than 500 kg of fresh vegetables per week, to those selling in excess of 5000 kg per week. The price at which retailers buy and sell potatoes also differs markedly between and within regions depending on the source of supply and the level of supply and demand (Batt, 2002).

### Data collection and analysis

Analysis of the supply chain for fresh potatoes in the Red River Delta involved detailed interviews with 60 potato farmers using a structured questionnaire. Information was sought on the cultivation and post-harvest practices adopted by the farmer and the average price farmers received for the potatoes they sold by month, tuber size and variety. Farmers were then asked what criteria they believed a market intermediary would use in choosing to purchase potatoes from them. Based on the purchasing literature from industrial marketing, farmers then responded to 15 statements about the quality of their offer on an importance scale of 1 (not at all important) to 6 (very important). Farmers then rated their ability to meet these same criteria on a scale of 1 (not at all well) to 6 (very well). Finally, farmers were asked to indicate why they perceived they were unable to meet the market intermediary's needs and the various constraints that prevented them from improving their offer quality. In the final section of the questionnaire, farmers were asked to describe the nature of their relationship with their preferred trading partner and to respond to 24 prepared statements. The various statements, derived and developed from the literature on buyer-seller relationships, were divided into three groups (satisfaction, trust and power/dependence). Initially, an agree/disagree scale of 1 (I disagree a lot) to 6 (I agree a lot) was tried, but pilot testing of the questionnaire indicated that farmers were unable to respond to the six-point agree/disagree scale. The scale was subsequently

divided into two three-point scales where 1 was “I agree/disagree a little” and 3 was “I agree/disagree a lot”. Farmers were then asked to indicate whether they agreed or disagreed with the statement and to rate the extent to which they agreed or disagreed. In order to facilitate data analysis, the three-point disagree scale was then reversed and the responses modified to revert back to the initial six-point scale.

Twenty potato farmers were interviewed from each of the three major potato-producing provinces in the Red River Delta (Hai Duong, Thai Binh and Bac Giang). The people who carried out the survey (known as enumerators) were instructed to interview four farmers from a minimum of five districts and to interview no more than two farmers from any one village. Interviews were conducted by research staff from the Food Crops Research Institute, Gia Loc.

At the conclusion of the interview, farmers were asked to identify the trader with whom they most frequently interacted. Based on the number of names received, 10 traders in each province were randomly selected for interview. Traders were asked to indicate the average quantity of potatoes purchased and from whom they purchased those potatoes. Information was sought on the prices paid to purchase potatoes by month, tuber size and variety. Traders were then asked to indicate whether they graded the potatoes or stored them before resale and the prices at which those potatoes were sold to market intermediaries. Traders were then asked to describe the various criteria they used in choosing to purchase potatoes from a farmer or collector agent. Traders then responded to the same 15 statements on an importance scale of 1 (not at all important) to 6 (very important). Traders then rated the extent to which farmers and collector agents were able to meet these same criteria on a scale of 1 (not at all well) to 6 (very well), and to indicate why farmers and collector agents were unable to meet their needs. Traders were then asked to describe the nature of their relationship with the farmers and collector agents from whom they most often purchased potatoes and the nature of their relationship with the market intermediaries to whom they most frequently sold potatoes.

At the conclusion of the interview, traders identified the potato wholesaler with whom they most frequently interacted. From the names received, 10 wholesalers were randomly selected for interview in Hanoi. Information was sought on the average quantity of potatoes purchased, the source of those potatoes and the prices paid to purchase potatoes by month, tuber size and variety. Wholesalers were then asked to indicate whether they graded or stored the potatoes before resale and the prices at which they were sold; as well as to describe the various criteria

they used in choosing to purchase potatoes from a potential supplier. Wholesalers responded to 15 statements on an importance scale of 1 (not at all important) to 6 (very important). They were asked to rate the extent to which their preferred suppliers were able to meet these same criteria on a scale of 1 (not at all well) to 6 (very well), and to indicate why their suppliers were unable to meet their needs. Wholesalers then described the nature of their relationship with the various traders and collector agents from whom they most often purchased potatoes and the nature of their relationship with the retailers to whom they most often sold potatoes.

Finally, 10 random interviews with retailers were undertaken in Hanoi with five additional interviews being undertaken with retailers in each of three provincial centres. Information was sought on the average quantity of potatoes purchased and from whom they purchased those potatoes. Information was sought on the prices paid to purchase potatoes by month, tuber size and variety. Retailers were asked to indicate whether they graded or stored the potatoes before resale and the prices at which those potatoes were sold. They were also asked to describe the various criteria they used in choosing to purchase potatoes from a supplier and to respond to 15 statements on an importance scale of 1 (not at all important) to 6 (very important). The retailers were also asked to rate the extent to which suppliers were able to meet these same criteria on a scale of 1 (not at all well) to 6 (very well), and to indicate why suppliers were unable to meet their needs. Retailers were asked to describe the nature of their relationship with the supplier from whom they most often purchased potatoes.

Data was entered into the SPSS program (Version 10.0) for analysis. The difference between what the market intermediary expected and what they received from their exchange partner was evaluated using the paired t-test. Although the mean ratings across the supply chain were analysed using one-way ANOVA, the sample sizes were generally too small to enable any meaningful statistics to be calculated. Hence, the majority of the analysis undertaken was descriptive.

### **Examining the price margins in the supply chain**

Since few farmers and market intermediaries maintain any written records of the prices at which they buy and sell potatoes, some errors in reporting are inevitable. Furthermore, since there is a degree of confidentiality associated with the reporting of market prices, respondents may deliberately choose to overstate the prices at which they have purchased

potatoes and to understate the prices at which they have been sold to reduce their perceived profit margin. While data was collected from three potato-growing regions, the most confidence is placed in the data collected from Hai Duong. This assertion is made because the Food Crops Research Institute was located within this province and the enumerators used to collect the data were well known and respected by the farmers and market intermediaries.

Farmers in Hai Duong indicated that they sold potatoes to traders for an average price of VND1385 per kg (US\$0.092 per kg). Traders indicated that they purchased potatoes from farmers for an average price of VND1470 per kg and sold those potatoes to both wholesalers in Hanoi and retailers in Hai Duong for an average price of VND1770 per kg. In Hai Duong, retailers indicated that they purchased potatoes from traders for VND1795 per kg and then sold those potatoes for an average price of VND2150 per kg. However, in Hanoi, wholesalers sold these potatoes for an average price of VND2180 per kg to retailers who sold the potatoes for an average retail price of VND2920 per kg (Table 1).

In Bac Giang, there was a difference of VND200 between the reported price at which farmers sold potatoes and the price at which traders purchased them. No doubt this was the result of intervention in the market by collector agents. Collector agents are responsible for sourcing potatoes from many small farmers and arranging for their transport to some central collection point. Farmers are paid in cash for their potatoes when the collector agent takes possession of the product. The potatoes are then graded and stored for five to seven days until the trader comes to pick them up. Depending on the level of services provided by the collector agent, traders appear willing to pay an additional VND50–200 per kg (Batt, 2002).

While there was a difference of VND145 per kg between the price at which traders indicated they sold the potatoes and the price retailers reported purchasing them, this was attributed to sampling error, for the retail margin was reported to be VND385 per kg; a figure that was consistent with other estimates.

In Thai Binh, it is apparent that farmers grossly over reported the prices at which they sold potatoes, for both the traders' margin and the retail margin were consistent with the other two potato growing districts. This was supported by anecdotal evidence and various unstructured interviews with growers undertaken during the preliminary phase of this research project. Furthermore, and similar to Bac Giang, the majority of potato farmers transacted with collector agents rather than traders.

An examination of the marketing margins along the supply chain reveals that the marketing margin increased as the product moved closer to the consumer. Traders were able to extract an average marketing margin of VND260 per kg, or 19%. In rural areas, retailers extracted an average marketing margin of VND410 per kg (or 25%). However, in Hanoi, wholesalers were able to extract a marketing margin in the region of VND395 per kg (or 22%), and retailers were able to extract a marketing margin of VND615 per kg (or 27%). However, the marketing margin that market intermediaries were able to extract was not consistent over the season. At both the beginning (December) and the end (February) of the harvest season, the marketing margins declined. Conversely, in January, during the peak harvest period, the marketing margins for all market intermediaries increased. Such pricing behaviour has been reported by Batt and Parining (2000) who accredited the reduced marketing margin during times of reduced supply to the increased competition between traders to secure the farmers' produce. At the consumer level, research undertaken by Batt (2002) reveals that consumers in rural areas seldom purchase potatoes for more than VND2200 per kg and, in Hanoi, consumers are unlikely to purchase potatoes at prices exceeding VND3500 per kg.

While traders may be able to extract an average marketing margin of VND260 per kg, the traders must not only grade and store the tubers they have purchased, but also pay for the costs of transporting the tubers from the farm to the various wholesale and retail markets. Even though most of the potatoes purchased by traders had been graded by the farmers

**Table 1.** Prices along the supply chain (VND per kg)

	Farmer		Trader		Wholesaler		Retailer	
	Sell	Buy	Sell	Buy	Sell	Buy	Sell	
Hai Duong	1385	1470	1770			1795	2150	
Thai Binh	1420	1280	1450			1465	1950	
Bac Giang	1170	1370	1680			1535	1920	
Hanoi				1785	2180	2305	2920	

and collector agents (59%), a significant proportion were purchased ungraded. Furthermore, over 54% of traders indicated that they regraded the potatoes they had purchased prior to resale. Although the costs of grading ranged from VND10–50 per kg, the market was willing to pay a significant price premium for larger tubers.

At the farm level, farmers received an average price of VND1385 for the large tubers (5–8 tubers per kg). For the extra large tubers (3–4 per kg), farmers received a price premium of VND185 per kg and for the medium sized tubers (9–15 per kg), the price was reduced by some VND180 per kg. For the small tubers (more than 16 tubers per kg), farmers received only VND500 per kg, hence most farmers retained the small tubers for feeding livestock. As the product moved through the supply chain, not only did the price premium increase for the larger tubers, but the disincentive for smaller tubers became more pronounced (Table 2).

Despite the differences in price, 74% of wholesalers and 70% of retailers reported that they did not regrade the potatoes they had purchased prior to resale. Presumably, having purchased the tubers from traders and collector agents, wholesalers and retailers had no recourse; what they could not sell, they would either have to eat themselves or incur the loss. No doubt, in the absence of any enforceable quality standards, wholesalers and retailers sought to reduce the perceived risk by transacting with reputable traders and collector agents.

While the majority of traders (70%) stored potatoes for 5–7 days, no doubt as an integral part of the process of consolidation, the majority of wholesalers (63%) indicated that they did not store potatoes. Conversely, some 57% of retailers indicated that they stored potatoes for up to one month. Presumably such storage practices were undertaken to accommodate the abrupt reduction in the supply of potatoes in February–March. Storage losses generally ranged from 1–5% and, quite surprisingly, were not related to the storage duration. This would suggest that the storage losses incurred were the result of either damaged or diseased tubers being placed in storage, rather than of any contamination occurring during the storage period.

Transportation costs consumed a significant proportion of the traders' marketing margin. Of the three areas studied, Hai Duong was the closest to Hanoi, hence traders were able to pay a significantly higher price and to transact directly with the farmers. Since both Bac Giang and Thai Binh were located at a greater distance, farmers were paid lower prices to accommodate the higher transportation costs. While it is unclear whether prices in Hanoi are set at the wholesale or the retail level, traders apparently work backwards, subtracting the costs of transport and the profit margin they seek to achieve, to arrive at a price they are prepared to pay the farmers and collector agents.

On the other hand, since most wholesalers neither regrade nor store the potatoes they have purchased, a much greater proportion of the marketing margin will be profit. However, given the significant price disincentive for small tubers, if wholesalers inadvertently purchase a large quantity of small to medium sized tubers, they may be exposed to potential trading losses. As the last market intermediaries in the chain, retailers have no recourse. Having purchased the potatoes, they must either sell them, lose them to infection by disease or consume them themselves.

### Gap analysis

Traders want to buy potatoes that are free of chemical residues, free of pests, diseases and physical injury, of the desired size (large), and which provide an acceptable shelf life. In order to meet the needs of their downstream customers, traders need to buy sufficient quantities of potatoes at a competitive price and to be able to pick them up when required (Table 3).

Regrettably, a simple methodological error meant that data was not collected from the wholesalers, however, retailers' expectations were not greatly dissimilar to those of the traders. Retailers did place greater emphasis on the ability of suppliers to meet their immediate needs. Since retailers purchased in much smaller quantities, being able to secure sufficient quantities of potatoes was much less important. Similarly, since most purchased from market intermediaries rather than directly from farmers, geographic proximity to their source was also much less

**Table 2.** Price differentials at which tubers are purchased by tuber size (VND per kg)

	Farmers sell	Traders buy	Wholesalers buy	Retailers buy
Extra large	+185	+170	+240	+450
Large	1385	1595	2180	2550
Medium	-180	-170	-480	-885

important. However, retailers placed more importance on purchasing a consistent, well graded line of potatoes. Variety was of little importance to retailers, presumably because most of their customers did not differentiate between varieties. While the market preferred large, evenly shaped tubers, the principal criteria consumers used in their decision to purchase were skin colour and flesh colour. Over many years, consumers had learned to associate yellow skin and yellow flesh with potatoes that tasted good and cooked well (Batt, 2002).

Traders indicated that the collector agents were generally better able to meet their perceived needs

than farmers. As the principal function of the collector agents is to aggregate the potatoes from many small farmers and to grade them prior to collection, this was not unexpected. However, since even this most fundamental task requires some effort, collector agents will only undertake these activities if they are adequately rewarded. As a result, traders report that it is more expensive to purchase potatoes from collector agents (Table 4).

Farmers were generally perceived as being unable to deliver sufficient quantities of potatoes that were free of pests and diseases, physical injury, of the desired size and which delivered the desired shelf

**Table 3.** Mean rating for what market intermediaries desire from upstream suppliers

	Traders	Wholesalers	Retailers
Free from chemical residue	5.74		5.21
Free from pests and disease	5.70		5.37
Desired size	5.52		5.42
Long shelf life	5.52		5.37
Sufficient quantity	5.45		4.68
Meet immediate needs	5.39		5.47
Good reputation	5.39		5.42
Competitively priced	5.35		5.26
Deliver when required	5.30		4.74
Free from physical injury	5.27		5.42
Desired variety	4.87		3.79
Proximity (close)	4.48		3.32
Well graded	4.26		5.05
Appropriately packed	3.48		3.00
Supply a wide range of fresh vegetables	3.39		3.06

where 1 is 'not at all important' and 6 is 'very important'

**Table 4.** The extent to which farmers and collector agents meet traders' needs

	Trader wants	Trader gets		Probability	
		Farmer	Collector agent	Farmer	Collector agent
Free from chemical residue	5.74	5.30	5.55	0.066	0.056
Free from pests and disease	5.70	4.87	5.05	0.034	0.061
Desired size	5.52	4.74	5.32	0.005	0.545
Long shelf life	5.52	4.70	4.91	0.013	0.015
Sufficient quantity	5.45	4.43	5.27	0.021	0.480
Meet immediate needs	5.39	4.91	4.86	0.077	0.030
Good reputation	5.39	4.91	5.14	0.164	0.284
Competitively priced	5.35	5.04	4.91	0.259	0.107
Deliver when required	5.30	4.91	5.64	0.025	0.096
Free from physical injury	5.27	4.13	4.86	0.005	0.016
Desired variety	4.87	4.91	5.05	0.803	0.436
Proximity (close)	4.48	5.04	4.77	0.163	0.521
Well graded	4.26	4.14	4.91	0.751	0.313
Appropriately packed	3.48	2.17	3.45	0.001	0.910
Supply a wide range of fresh vegetables	3.39	3.43	2.85	0.877	0.438

where 1 is 'not at all well' and 6 is 'very well'

life. Even though traders placed little importance on packing, most reported that the manner in which farmers packed potatoes was significantly below their expectations.

Although collector agents regraded the potatoes prior to resale, shelf life and freedom from physical injury remained problematic for the traders. Since the majority of potatoes in the Red River Delta are harvested before they are mature (Batt, 2002), the skin is unlikely to have hardened sufficiently. As a result, the tubers are more susceptible to damage, dehydration and decay. The high incidence of physical damage is, no doubt, related to harvesting practices.

Although no data was collected that quantified the wholesalers' expectations, it was apparent that most wholesalers were dissatisfied with both the technical quality and the functional quality of the product they received from traders and collector agents. Wholesalers reported that the tubers they received were often too small and excessively damaged by both pests and disease and physical injury. As a result, the shelf life of the product was generally too short. Suppliers were often unable to meet the wholesalers' immediate needs and variations in product quality at the farm level made it difficult for traders and collector agents to provide a consistent quality. While the inability to meet wholesalers' immediate needs was, no doubt, the result of geographic distance, since both the traders and collector agents operated in rural areas, most wholesalers reported that the prices traders and collector agents expected for the potatoes they sold were too high (Table 5). Conversely, for the majority of retailers, suppliers either met or exceeded their expectations. Although prob-

lems were reported in the same key areas: tuber size, freedom from physical injury, shelf life and price, it was only the inability of suppliers to provide tubers that were substantially free from pests and diseases that proved to be significantly different from what other members in the supply chain had said.

Two of the three market intermediaries recognised that the high price of potatoes was a major constraint (Table 6).

Traders indicated that it was too expensive to purchase potatoes from both farmers and collector agents; while retailers indicated that it was too expensive to purchase potatoes from wholesalers. Since wholesalers did not indicate that it was too expensive to buy potatoes from traders, this would imply that wholesalers, being in perhaps the most powerful position in the market, were able to extract the margin they desired irrespective of the purchase price and to pass these higher costs onto the metropolitan retailers who had no alternative source of supply.

From the wholesalers' perspective, the major problem experienced with traders was the narrow range of vegetables delivered. This would imply that wholesalers sought to buy more than just potatoes from the traders, but since most traders (in the Red River Delta) bought and sold potatoes only when potatoes were available from the farmers, this would not seem possible. Various other problems were experienced with the quality of the tangible product including inappropriate varieties (to meet the customers' intended use), tubers infected with disease and contaminated with chemical residues, small tuber size and a high incidence of physical damage to tubers. Problems with the functional quality included

**Table 5.** The extent to which upstream suppliers meet wholesalers' and retailers' needs

	Want		Get		Probability
	Wholesaler	Retailer	Wholesaler	Retailer	
Meet immediate needs		5.47	4.70	5.63	0.420
Good reputation		5.42	4.40	5.26	0.578
Desired size		5.42	4.80	5.26	0.625
Free from physical injury		5.42	4.40	5.00	0.119
Free from pests and disease		5.37	4.50	4.68	0.015
Long shelf life		5.37	3.80	5.16	0.429
Competitively priced		5.26	4.80	5.11	0.506
Free from chemical residue		5.21	3.70	5.32	0.695
Well graded		5.05	5.00	5.05	1.000
Deliver when required		4.74	5.00	5.58	0.038
Sufficient quantity		4.68	5.30	5.53	0.061
Desired variety		3.79	3.80	4.16	0.309
Proximity (close)		3.32	3.40	4.05	0.105
Supply a wide range of fresh vegetables		3.06	2.60	3.22	0.721
Appropriately packed		3.00	3.80	3.37	0.185

where 1 is 'not at all well' and 6 is 'very well'

**Table 6.** Why suppliers fail to meet the needs of downstream customers (%)

	Trader to Farmer	Trader to Collector agent	Wholesaler to Trader	Retailer to Wholesaler
High price	75	48	10	50
Poorly graded	21		10	18
Inappropriate varieties		33	50	16
Narrow range of vegetables			78	16
Poor quality	41			13
Small tuber size	8	24	10	11
Not free of physical injury		24	10	11
Cannot meet immediate needs				11
Poor packing	17		22	10
Not free of disease	13	29	30	8
Poor storage capability				8
Poor reputation	8			
Not free of chemical residues		5	33	
Cannot deliver required quantity		10	30	
Excessive distance		10	56	

poor packing and an inability to deliver sufficient potatoes for wholesalers to satisfy their customers' needs. No doubt, since the traders operated in rural areas and, presumably, since wholesalers were not able to readily communicate with their suppliers, distance was perceived to be a major impediment.

For the retailers, while wholesalers could generally supply sufficient potatoes to meet their needs, they were unable to respond to their immediate needs. Retailers also experienced more problems with inconsistent tuber quality.

Comparing the various impediments traders experienced with purchasing potatoes from farmers and collector agents provided some interesting results. Traders deemed that it was more expensive to purchase potatoes directly from farmers. Presumably, this was because farmers demanded a high price and provided only small quantities of largely ungraded tubers. Thus, traders experienced more quality problems when transacting directly with farmers. However, when dealing with collector agents, traders experienced more problems with inappropriate varieties, small tuber size, physical injury and tubers being infected with disease. The only plausible explanation for this would appear to be the traders' ability, when purchasing direct from farmers, to select for themselves, those tubers they wanted to buy or to reject. Conversely, when purchasing from a collector agent, the trader must purchase the entire quantity. It would also seem highly likely that, since collector agents store potatoes for between 7–10 days, any problems regarding tuber decay would be more likely to show up after a short period of storage rather than immediately after harvest.

While traders indicated that they experienced more problems with poor packing when purchasing

direct from farmers, farmers acknowledged that poor packing was one of the major impediments that prevented them from meeting the needs of their downstream customers (Table 7). Poor grading, contamination by disease, a high incidence of physical injury, poor appearance and small tuber size were also perceived to be problems. However, that variable which farmers believed most prevented them from meeting the needs of downstream customers was the high purchase price.

Farmers believed that the major factors contributing to their inability to meet customers' perceived needs was insufficient capital (62%) which impacted adversely upon their ability to purchase good quality seed and sufficient quantities of inputs to maximise productivity. Nevertheless, various other agronomic constraints affected the farmers' ability to produce good quality potatoes including heavy rain and the cropping pressures under which farmers found themselves operating; eg many farmers reported that compost applied had not broken down completely. The agro-ecological environment of the Red River Delta is far from optimal for the production of potatoes and not all farmers possess the skills to improve productivity. In this case, where farmers are operating below their full potential, costs per unit output will be proportionately higher (Table 8).

Lack of knowledge was also perceived to be a major problem for the traders. While it is readily apparent that farmers would benefit most by improving their agronomic knowledge, traders may not have the knowledge to differentiate between varieties, to identify infected tubers, to know how to store tubers or to understand the dynamics of the market.

**Table 7.** Variables that prevent suppliers from meeting customers' needs (%)

	Farmer to Trader	Trader to Wholesaler	Wholesaler to Retailer
Insufficient quantity			32
Inappropriate varieties	5	29	26
Not free of diseases	17		21
Insufficient range			21
Too far from customer			21
Not free of physical injury	18		16
Small tuber size	2		16
Price too high	48		
Poor grading	33	38	
Tubers not packed	20		
Poor appearance	8		
Cannot source better quality		25	

**Table 8.** What prevents suppliers from better meeting customers' needs? (%)

	Farmer	Trader	Wholesaler
Lack of capital	62	29	
Unable to buy good quality seed	35		
Agonomic issues	32		
Lack of knowledge	12	42	
Don't have desired variety		8	

### Downstream relationships in the potato supply chain

Contrary to expectations, it was apparent that most farmers had a very positive relationship with their preferred trading partner. The majority of farmers were very satisfied with their trading partners and trusted them. Farmers reported that their preferred trading partners were always honest and kept their promises. Since their preferred trading partners seldom acted opportunistically, farmers had confidence in them and generally believed the information they provided. Most farmers maintained that they had a close personal friendship with their preferred trading partner (Table 9).

It is also apparent that most farmers were able to act independently of their preferred trading partner, despite the modest levels of financial assistance provided and the willingness of their preferred trading partner to share the risks. Most farmers indicated that they could readily choose an alternative trading partner, although most did not wish to do so because they believed their preferred trading partner had made the best offer relative to the alternatives. Furthermore, most farmers indicated that their preferred trading partners seldom had all the power in the relationship, nor did they control all the information. Consequently, the preferred trading partner was seldom able to coerce farmers into making decisions that were not in their best interests.

Similarly, the traders' relationship with their preferred wholesale trading partner was also quite positive, with most traders indicating high levels of trust and satisfaction in the exchange. However, it was apparent that the traders were more dependent upon their preferred wholesale trading partners, even though they did not necessarily provide the best offer. Traders perceived that their wholesale trading partners had more power and controlled more of the information, although they were less willing to provide financial assistance or to share risks.

Conversely, the majority of wholesalers indicated very low levels of both satisfaction and trust in their relationships with retail customers. Transactions entailed a high degree of risk and there was a greater possibility of being exposed to opportunistic behaviour and conflict in the relationship. There was minimal cooperation between wholesalers and retailers and minimal trust. As a result, most wholesalers indicated that their retail trading partners had a poor reputation. Wholesalers were not only more dependent, but retailers also wielded more market power and controlled more of the information. Retailers were also less likely to provide financial assistance or to share the risks.

### Upstream relationships in the potato supply chain

In reviewing their relationship with farmers and collector agents, the majority of traders also indicated

**Table 9.** Mean ratings of relationship variables for downstream relationships between market intermediaries

	Farmer to Trader	Trader to Wholesaler	Wholesaler to Retailer
<b>Satisfaction</b>			
Trading with preferred partner is less risky	5.82	5.83	4.20
Good cooperation with preferred trading partner	5.64	5.70	3.70
Expect to continue to trade with partner	5.61	4.40	4.64
Preferred trading partner meets expectations	5.55	5.43	3.10
Treats me fairly and equitably	5.49	5.77	4.10
Adequately rewarded	5.44	5.57	4.30
Quick to handle complaints	5.22	4.10	3.10
Much conflict with preferred trading partner	2.09	2.47	2.90
<b>Trust</b>			
Confidence in preferred trading partner	5.58	5.03	3.90
Always keeps promises	5.54	5.20	4.00
Always honest	5.53	5.37	4.00
Good reputation	5.46	5.33	2.70
Trust preferred trading partner	5.36	4.93	4.30
Believe information provided	5.05	4.53	3.70
Close personal friendship	5.03	4.77	3.80
Trading partner always considers best interests	3.81	3.10	3.30
<b>Power/dependence</b>			
Free to choose another trading partner at any time	5.71	4.90	2.90
Has best offer relative to alternatives	5.31	4.57	4.30
Partner provides financial assistance	4.98	3.43	2.70
Willing to share risks	4.86	3.87	2.40
Must adhere to partners' demands	2.78	2.37	3.78
Trading partner has all the power	2.28	2.83	4.30
Trading partners control all the information	2.21	2.40	3.00
Trading partner often acts opportunistically	2.15	2.03	3.22
More dependent on trading partner	2.07	2.37	4.50

where 1 is 'I disagree a lot' and 6 is 'I agree a lot'

that they experienced high levels of satisfaction and trust. Understandably, because the collector agents accumulated potatoes from many small farmers, traders generally felt they could rely more upon the collector agents than they could upon individual farmers. Furthermore, the collector agents were both more willing and able to provide financial assistance and to share the risks. However, somewhat surprisingly, traders indicated that they were more dependent on farmers than they were upon their collector agents. Since the farmers could choose the trader to whom they would sell their potatoes, farmers generally exercised more power and controlled more information (Table 10).

Just as wholesalers reported a not entirely satisfactory relationship with their downstream trading partners, they also indicated that they were equally dissatisfied in their relationship with the traders and collector agents. Wholesalers reported that traders seldom treated them fairly and equitably and, on many occasions, failed to meet their expectations. Despite the longevity of the relationship (an average

of six years), there was a high degree of risk associated in the exchange. Traders were slow to respond to the wholesaler's complaints and there was evidence of only moderate levels of cooperation in the exchange. Wholesalers also reported that despite the opportunity to choose from several alternative suppliers, traders and collector agents had more power and controlled more of the information. Nevertheless, wholesalers indicated that they were neither dependent nor did they have to adhere to the trader's demands. This was achieved because most wholesalers (68%) purchased potatoes from more than two traders and collector agents (Batt, 2002).

No doubt because of the potential variation in the quantity and quality of the tubers delivered by traders and collector agents, wholesalers demonstrated the least amount of trust in their relationship with their upstream suppliers. Wholesalers believed that traders and collector agents were more dishonest and less likely to keep their promises. However, wholesalers also seemed less willing to believe in the information provided by traders and wholesalers and

**Table 10.** Mean scores on relationship variables for up-stream relationships between market intermediaries

	Trader to Farmer	Trader to Collector agent	Wholesaler to Trader	Retailer to Wholesaler
<b>Satisfaction</b>				
Trading with preferred partner is less risky	5.83	5.55	3.90	5.40
Good cooperation with preferred trading partner	5.70	5.68	4.10	5.45
Preferred trading partner meets expectations	5.48	5.32	4.60	5.60
Treats me fairly and equitably	5.48	5.68	3.50	5.50
Adequately rewarded	5.41	5.41	4.70	5.10
Expect to continue to trade with partner	4.82	5.18	4.60	5.13
Quick to handle complaints	4.26	4.77	2.70	4.90
Much conflict with preferred trading partner	2.17	2.27	2.60	2.05
<b>Trust</b>				
Trust preferred trading partner	5.35	5.00	4.40	5.16
Always honest	5.17	5.29	4.00	4.90
Good reputation	4.95	4.68	4.00	4.60
Always keeps promises	4.91	5.23	4.10	4.85
Confidence in preferred trading partner	4.87	5.27	4.20	5.10
Close personal friendship	4.68	4.73	4.20	4.42
Believe information provided	4.10	4.23	4.10	4.95
Trading partner always considers best interests	3.04	3.18	3.50	2.70
<b>Power dependence</b>				
Free to choose another trading partner at any time	4.77	5.10	4.40	5.80
Has best offer relative to alternatives	4.05	4.14	4.60	5.25
Willing to share risks	3.32	3.82	3.20	4.03
Partner provides financial assistance	2.91	3.18	4.44	4.24
Trading partner has all the power	2.91	2.59	3.30	3.70
Trading partner controls all the information	2.82	2.27	2.80	1.90
Must adhere to partner's demands	2.77	2.32	2.60	2.30
More dependent on trading partner	2.36	2.23	2.70	2.45
Trading partner often acts opportunistically	2.36	2.00	2.33	2.20

where 1 is 'I disagree a lot' and 6 is 'I agree a lot'

perceived them to engage more frequently in opportunistic trading. This would suggest that price was of considerable importance in the transaction. Wholesalers believed that if traders and collector agents could obtain a higher price from an alternative customer, they would be more likely to abandon their relationship. In turn, traders and collector agents could readily blame their inability to deliver on the inconsistent supply from farmers.

While the wholesalers were generally dissatisfied in their relationship with their retail customers, retailers expressed quite high levels of satisfaction and trust in their relationship with the wholesalers. Indeed, most retailers intended to continue to trade with their wholesale trading partner, even though there were plenty of alternatives, noting that their current wholesale supplier provided the best offer relative to the alternatives. However, retailers expressed some doubt as to whether wholesalers always acted in their best interests. Wholesalers seemed the most willing to share the risks and some were even willing to provide financial assistance.

## Conclusions and implications

An analysis of the price margins along the supply chain demonstrates that there is a reported variation of VND95–200 per kg between the price at which farmers sell potatoes and the price that traders buy them. While some of the variation can be explained by sample error, in other instances, the variation can be explained by the intervention of collector agents, who, as representatives of the traders, purchase small quantities of potatoes from many small independent farmers, aggregate these potatoes and then grade them into a longer, more consistent line for the traders to collect. For the provision of these services, collector agents are paid between VND50–200 per kg. Having purchased these potatoes, the traders indicate that they are able to extract a marketing margin of between VND170–310 per kg. Potentially, given that there is a margin of some VND220–510 per kg or 28% between the price at which the farmer sells potatoes and the price at which the traders sell potatoes, there may be some opportunity for

cooperative marketing to return more of this margin to the farmers.

Shepherd and Futrell (1982) begin their discussion on the role of agricultural cooperatives by refuting the widely held belief that the larger the marketing margin, the more inefficient the market. If individual farmers were to sell their products to consumers directly, the prices paid by consumers and the prices received by farmers would be identical. The marketing margin would be zero, but the market would be exceedingly inefficient. Using the same argument, they demonstrate how the elimination of middlemen will not necessarily improve the efficiency of the market, for if farmers were to distribute their produce directly to consumers, the costs of transport and the farmers' marketing costs would increase appreciably.

While the physical distribution of product creates time, place and product form utility, the additional value created usually comes at a cost. Not only must the traders regrade and store the tubers they have purchased but, given the significant price premium paid for large tubers and the various problems associated with harvesting immature tubers, excessive physical injury and infection by pests and disease, some risk and some losses are inevitable. Furthermore, traders must also pay for the cost of transporting the tubers from the farm to the various wholesale and retail markets.

While farmers often seek to establish marketing cooperatives as a means of diverting more of the profit extracted by the market intermediaries to the farmer, the greatest opportunity for cooperatives lies not in diverting profits, but in reducing costs (Shepherd and Futrell, 1982). Cooperatives are often in a position to reduce costs by handling greater volumes of produce than their competitors. However, many cooperatives have found to their dismay that they cannot operate at a lower cost. Kohls and Uhl (1990) suggest that in low capital industries such as fresh fruit and vegetables, the economies of scale are not so great. Economies of scale are usually gained by continuous, large-scale production from specialised farm units. In the Red River Delta, where potato production is highly seasonal and derived from many thousand small farmers, it is highly unlikely that any real economies of scale could be achieved. Since the majority of collector agents and traders operate primarily as small businesses themselves, it is highly unlikely that any formal cooperative group could compete cost effectively as it would have to pay for fixed management overheads.

Traditionally, cooperatives have been established to enable farmers to do collectively what they cannot achieve independently: to alter the competitive structure of the market (Kohls and Uhl, 1990). Through

acting collectively, many small farmers are able to approach the market as a single business, thereby enabling them to improve their bargaining position with other firms. However, the key assumption is that by continuing to work independently, farmers are subjected to exploitive marketing practices. If this were the case, potato farmers in the Red River Delta would demonstrate low levels of satisfaction and trust and a high degree of forced collaboration or dependence in their relationship with trading partners. This is not the case. Most farmers report that there is minimal conflict in their relationship with their preferred trading partner. Most farmers perceive that they have been adequately rewarded and treated fairly and equitably. There is good cooperation between the farmer and their preferred trading partner and a high degree of trust in the relationship. Farmers had confidence in their preferred trading partner and could rely both on the accuracy of the information provided and the knowledge that their exchange partner seldom acted opportunistically. Since information was widely available, traders who did behave opportunistically would be readily detected. Within a small rural community, the trader's reputation would suffer immeasurable damage and, with few barriers to switching, farmers could readily choose an alternative trading partner. However, it was also apparent that most farmers expected to continue to transact with their preferred trading partner. It is possible to conclude therefore, that potato farmers in the Red River Delta choose to stay with their preferred trading partner because they want to, not because they have to.

When the relationships in the supply chain are analysed from a customer rather than a supplier perspective it is apparent that the traders are more satisfied with the offer quality they receive from the collector agents rather than the farmers. This would suggest that collector agents are not only performing some important assembly function, but by sorting and regrading the potatoes they are performing an important value-adding activity. Gap analysis confirms that, while several issues remain unresolved (inadequate shelf life and the high incidence of physical damage), the collector agents offer quality is generally higher with regard to both the technical quality dimensions and the functional quality dimensions. Since the traders are even less dependent on the collector agents than they are on the farmers, traders would not transact with the collector agents if they considered the additional costs they incurred as being too high. Competition between the many collector agents will ensure that traders receive a competitive price.

While traders generally indicate high levels of relational satisfaction and trust with their preferred

wholesale partners, it is abundantly clear that the wholesalers are much less satisfied in their relationship with their preferred suppliers. Most of the wholesalers' problems are derived from the inability of traders to deliver potatoes that are of the desired size, free from physical injury, pests and diseases and which provide an acceptable shelf life. While traders are generally able to provide sufficient quantities of potatoes and to deliver them when they are required, most wholesalers report that traders have a questionable reputation. Presumably, since most traders provide potatoes that are well graded, this relates more to the traders' desire to allocate more produce to those wholesalers who are willing to pay the highest price. Potentially, since wholesalers are the most dissatisfied, the least trusting and the most dependent upon their up-stream suppliers, farmer cooperatives may be readily accepted by the wholesalers, providing that they can offer better quality product at a more competitive price. Since most wholesalers indicate that they want to purchase a range of vegetable crops from their preferred supplier rather than just potatoes, offering a greater range of produce will greatly facilitate not only the entry of any cooperative into the marketing system, but also have a significant positive impact on cash flow and profitability. Furthermore, since more than 85% of the potato crop in the Red River Delta is harvested in just one month, by providing adequate storage facilities, cooperatives might be able to extend the seasonality of supply and, to a limited extent, smooth the market price.

Price and the price/quality relationship is reportedly the major problem throughout the supply chain for fresh potatoes in the Red River Delta. At the farm level, the poor productivity per unit area, the large number of small tubers, the high incidence of pests and disease, physical injury and poor storage performance of tubers, can all be attributed to various agronomic issues, poor quality seed and the lack of adequate capital. Without first addressing and improving productivity on the farm, any first level marketing cooperative will struggle to survive. Where product quality is highly variable and a large proportion of production falls outside the size specifications sought by downstream market intermediaries, the costs of grading will increase. That then introduces the additional problem of how to dispose of product which is rejected.

To have any real impact in the market, any potential cooperative will need to work at both the input and the output end. With most farmers reporting that the lack of capital is the major constraint affecting their ability to provide better quality potatoes, the cooperative might establish itself as an alternative source of finance. Being run by the farmers, for the

farmers, such problems as unexpected crop failures could be readily accommodated, as such natural calamities would affect most farmers. By consolidating the farmers' needs for chemicals, fertilisers and good quality seed, the cooperative should be able to purchase these inputs at a lower cost. Additional services might include the provision of improved market information, insurance or a range of other social and infrastructural services such as power, telephone, education and health care.

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# Contract farming and village organisations: three case studies from Indonesia

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## Introduction

THIS paper presents some preliminary results from a larger ongoing project analysing three farm contracts in East Java, Bali and Lombok. The primary purposes of the larger study are to examine the effects of the three contracts on welfare of participating smallholders, reasons for contract participation and identification of the implications of contract farming for government policy. Analysis of the data collected in the study has been completed for the East Javanese and Bali contracts, with preliminary results for the East Javanese work presented in Simmons et al. (2003).

It was never our intention to pay particular attention to village farmer organisations associated with the three contracts, however after conducting our first smallholder survey in East Java it became apparent that such organisations were an important part of the story. The purpose of this workshop paper is to explain what we discovered about links between contract farming and farmer organisations from our three case studies. The first section of the paper identifies three types of farmer organisations associated with contract farming, the next section explains the ways that contract farming affects smallholder welfare, the next three sections are the case studies and the final section uses the case studies to discuss farm level linkages associated with contract farming and effects of contract farming on village organisations.

## How farm contracts influence smallholder welfare

Over the last two decades market liberalisation has profoundly influenced agriculture in both developed and developing parts of the world. Market liberalisation, driven by WTO and earlier GATT Rounds, new technology and changing food habits have resulted in deregulation of domestic food markets and opening and expansion of international markets (Jaffee, 1994). Ponte (2000) examines the economic and

social impacts of liberalisation and associated micro-economic reform on African agriculture with less government credit, less parastatal production (where production is subject to controls by a government statutory organisation) in food markets and removal of price supports and input subsidies. Marsh and Runsten (1995) report microeconomic reforms in Mexico such as the 1989 deregulation of trucking and exports. Goodman and Watts (1997) provide a broader picture of effects of international trade expansion in food products on the economic and social environments in developing countries. These studies show market liberalisation is changing patterns of agricultural production in terms of on-farm crop and livestock mixes, increasing total production in physical and value terms and changing the types of food products entering international markets. The studies also show traditional values and habits in agriculture are being replaced by transactions that increasingly reflect a 'cash culture'.

Contract farming is an integral part of this process however the net effect of contract farming on the welfare of smallholders has been controversial. A number of authors express concern that contractors favour larger growers and hence poorer growers may be left out of the development process (CDC, 1989; Runsten, 1992; Little and Watts, 1994). Other hazards of contract farming are the potential for 'capture' of smallholders within contracts, negative social effects of the 'cash economy', narrowing of local markets as contracted production squeezes out local food production, deteriorating contract terms as contracts mature, and general concerns about how multinational corporations behave in developing countries (Clapp, 1988; Wilson, 1990; Little and Watts, 1994; Torres, 1997; Singh, 2000). Positive evaluations of contract farming generally indicate farmers either benefit from contracts in terms of enhanced profits or get out of them. Benefits from contract participation result from improved access to markets, credit and technology, better management

of risk, improved family employment and, indirectly, empowerment of women and development of a successful commercial culture (Glover and Kusterer, 1990; Runsten, 1992; Key and Runsten, 1999; Eaton and Shepherd, 2001).

The economic benefits of contract farming described in the literature (Simmons, 2003; Key and Runsten, 1999) are remarkably similar to those claimed for farmer cooperatives by the International Cooperative Information Centre on its website <http://www.wisc.edu/uwcc/icic/> and elsewhere in the developing country farm cooperatives literature summarised in Shar (1995). That is, both contract farming and cooperatives provide an institutional structure that allows smallholders to overcome various types of transaction costs and hence to make more productive use of their capital (in the sense described by de Janvrey et al., 1991). Incidentally, the parallels between contract farming and cooperatives are not limited to the types of benefits that each confers. Based on the 40 or so case studies of cooperatives in Shah (1995), it seems that all the things that can go wrong in a farm contract can also go wrong in a cooperative: non-compliant behaviour, corruption, bad management, poorly thought out arrangements and domain problems such as adverse political pressures, drought, pests and disease and collapsing output and factor markets.

In this context, four potential benefits from contract farming, also attributed to successful cooperatives, are important:

### **Access to markets**

Recent expansion of contract farming is often viewed as part of the broader globalisation phenomenon whereby removal of trade restrictions has led to increased flows of agricultural products, especially from developing to developed countries. Runsten (1992) documents a range of contracts since 1989 for high-value food (HVF) crops including strawberries, melons and frozen vegetables processed in Mexico then exported to the United States by both domestic and multinational agribusiness firms. Goodman and Watts (1997) document the development of contracts, alongside other multinational activity, for pineapples and bananas from Central American countries for export to the United States and Europe. Glover and Kusterer (1990) document similar activity in Central American countries and Porter and Phillips-Howard (1997) examine a range of new types of contractual arrangements involving international trade from Africa.

Agribusiness firms are instrumental in 'opening' markets for smallholders in all of these studies. These firms have advantages over smallholders in

market knowledge and experience, information, legal expertise, economies to size in processing and transport and have the financial muscle necessary for sustaining international trade relationships. From a smallholder perspective, in the absence of contracts these markets are 'missing' in the sense that transaction costs of accessing them on a small scale are effectively infinite.

### **Access to credit**

Non-traditional or high-value food crops are more costly to produce than traditional crops and cash requirements for farm inputs are usually relatively high (Goodman and Watts, 1997; Key and Runsten, 1999). These crops often require specialty inputs and have more exacting quality requirements requiring sophisticated technology and flexible use of labour and chemicals. Hence, smallholders need access to credit to undertake production.

Many smallholders are credit constrained in the sense they have no access to credit at all (Glover and Kusterer, 1990; Hayami and Otsuka, 1993). Alternatively, if access is available they face high interest rates, often three to four times the bank rate, from local moneylenders or excessive transaction costs if they use bank credit. High interest rates reflect relatively high costs faced by local moneylenders in sourcing funds and servicing borrowers who do not have collateral. Titles to land may be traditional rather than legal and court processes slow, expensive or ineffective so that defaulters are not worth pursuing legally. In this situation, the only assurance a moneylender has of repayment is the smallholder's desire for future loans and, since they are often part of the same community, may face social pressure to be benevolent when repayments are delayed by bad seasons or exigencies such as weddings and funerals. These high costs are passed on to borrowers in the form of high interest rates. When smallholders seek credit from agricultural banks or micro-lenders, transaction costs are high. On even small loans they may face forced purchases, loan delay costs, travel costs, application fees, legal service costs and collateral titling costs (Key and Runsten, 1999).

The agribusiness firm has several strategic advantages over banks and traditional lenders in borrowing that can be conferred on contractors through contracts. The contract confers lending advantages on the agribusiness firm through monitoring of input use, control over crop management decisions that might jeopardise repayment and specification of how cash advances are to be repaid. Also, contracts require delivery to the firm hence cash advances can be deducted from post-harvest cash settlements (Key & Runsten, 1999). Other loan protection devices

include making future contracts dependent on meeting repayment clauses in current contracts and making loans in the form of specialised agricultural inputs rather than cash. Finally, there may be no other local market for the contracted commodity than the agribusiness firm, thus ensuring collateralised farm output is not diverted to other markets to avoid repayment. These factors reduce the need for collateral and mean that agribusiness firms have relatively low costs of lending to smallholders who are holding their contracts.

### **Managing risk**

Entering a contract may mitigate or exacerbate smallholder risk. If upfront investment is required then failure of either the crop or the contract results in loss. Alternatively, if the contract works and becomes integral in the farm plan then it constitutes a form of diversification and may reduce risk, providing it does not dominate the farm plan.

Non-traditional crops are likely to be more risky than traditional crops. They have higher production costs hence more income is at risk in the event of crop failure. In addition, prices of non-traditional crops are more volatile due to thinly traded markets, yield is more uncertain than with traditional crops and such crops are often more perishable (Marsh and Runsten, 1995). Hence, adoption of these crops can be unattractive from a risk standpoint without some form of risk protection. Such protection can occur in contracts in different ways. Subsidies may be provided when farmers first enter contracts to reduce risks in setup of the new enterprise, cash assistance with operating costs and extension and management input from the firm may reduce yield risk. Glover and Kusterer (1990) report that smallholders with contracts were subsidised in the early years of their participation, and extension from the contracting firms was important in reducing yield risk.

Agribusiness firms could hedge some price risk for high-value food products in options and futures markets to protect their own forward commitments and provide upstream protection to smallholders. However, we found no evidence of firms actually doing this by putting price guarantees in contracts. In contracts we examined for seed corn, mangosteens and ginger, contract prices were set at a small premium to open market spot prices prevailing at the time of delivery.

Thus, opportunities for reducing smallholder risk through contracting include diversification into a new crop with price movements largely independent of those for traditional products, reduced risk associated with start-up costs, seasonal operating costs met by the firm through subsidies at start-up and forward

payments and reduced yield risk from the firm's extension activities.

### **Provision of information**

Information can be expensive to gather and is not depleted by use. Hence, an agribusiness firm spreading information over many contracts has advantages in providing crop specific information over smallholders gathering their own information. Most contracts described in Glover and Kusterer (1990) included visits by firm extension officers to either individual farmers or farm groups several times during the first year of the contract but often less in later years. These visits combined dissemination of information with suggestions about management as well as providing firms with feedback on issues between themselves and growers. Most developing countries have government extension services to disseminate information about traditional crops however, given the limited nature of developing country government resources, these agencies are unlikely to provide specialised information about new crops. Such specialised information may concern chemical restrictions related to food safety requirements in specific markets, timing of planting and harvest to meet markets, management of product quality and other market and technical information.

### **Links between contract farming and village organisations**

We found three types of farmer organisations associated with contract farming. In the first type, participation in a particular group is a condition of entry to the contract and the group is entirely linkage dependent on the contract. Such an organisation is created specifically by the contracting firm to facilitate communication with its contractors and may be comprised of farmers who have not met previously or a sub-set of an existing farmer or irrigation group. The purpose of this type of group is to allow efficient communication between the firm and growers. The groups may meet as often as once a month and activities can include agricultural extension by a firm representative and feedback from growers to the firm about problems with contract terms and their interpretation. The second type of organisation, which may be linkage dependent or linkage independent, is the traditional village grower or irrigation group. Members of an existing group may collectively seek out a contract, negotiate its terms and cooperate in management of resources to service it, even if all members do not end up as contractors. In the irrigation areas we surveyed it would be unthinkable for a smallholder to undertake a new type of production

such as contract farming without consulting his irrigation group. The third type of group is linkage independent and forms after the contract has been implemented. This type of organisation is designed to protect growers by bringing political pressure to bear on the contracting firm in response to harsh contracting terms. These organisations are particularly common in contract farming in developed countries however there are also a number of cases in developing countries (Glover, 1987). We did not encounter such groups in Indonesia and concluded that growers had traditional 'channels' for complaints about legality of third party behavior.

### Case study 1: East Javanese seed corn production

Pioneer is a multinational corporation growing a range of high-value agricultural products in many countries including Australia. In Indonesia, Pioneer grows only hybrid seed corn which is produced only in East Java. Between 30–40% of this seed is exported, mainly to the Philippines with small amounts to Thailand and Japan and the remaining 60–70% is sold domestically. Pioneer first offered contracts for the production of hybrid seed corn to East Javanese smallholders in 1986. At present there are between 40 and 50 grower groups participating in the contract each year with a total of about 10,000 contracted growers. Average plantings are around 0.2 ha and total plantings by Pioneer contractors last year were around 2000 ha. Production of seed corn was around 7000 tonnes (with an additional 5000 tonnes rejected on quality grounds and sold as consumption corn) which was cleaned, screened, sized, tested and packaged in the plant in Malang for sale in small packs (1, 5 and 40 kg) and jumbo packs of 1000 kg.

There is only one quality standard although different varieties are grown. Only 40–50% of delivered seed meets the standard and seed not reaching this standard is sold as consumption corn. All seed delivered to the plant is accepted regardless of quality. Quality issues are dealt with by excluding poor performers from future contracts and by spotting problems in the field prior to harvest. Pioneer says "if growers follow guidelines then quality problems are 'bad luck' and costs will be borne by the company". The cost of this risk is probably spread over all growers through offer prices.

The price paid to growers is 130% over the prevailing spot price for consumption corn. Currently

spot price<sup>1</sup> for consumption corn is around Rp. 500 per kg compared to a contract price of around Rp. 1150 per kg. (Yield from contracted corn is around 6 tonnes per ha compared to a consumption corn yield of 12 tonnes per ha.) Inputs provided by Pioneer include foundation seed, money for land preparation, physical inputs (chemicals) and extension services. Costs of these inputs (except extension services) are deducted from the post-harvest payment for the crop with Pioneer organising funding through a commercial bank.

Negotiation, for single season contracts only, occurs at grower group level between Pioneer and the *ketua kelompok tani* (Head of the Grower Group, HGG) who represents the interests of growers in his group. Negotiations also involve the *kepala desa*, (village mayor), local politicians and government extension officers. These parties do not actively negotiate, rather, their roles are firstly, to legitimise the outcome of the negotiations and, secondly, to act as intermediaries or 'referees' if a dispute arises. There is a written agreement at group level signed by the HGG, politicians and extension officers with verbal agreements between growers and the HGG. Thus, the contract selection problem for Pioneer is primarily at grower group level with the selection decision taking into account distance from plant, irrigation, previous corn experience and disease and rodent problems.

Pioneer provides one extension officer for every one or two villages. They provide advice to growers on husbandry, monitor the crop and provide feedback to Pioneer. The staff member is likely to have an undergraduate degree in agriculture and to come from a farming background. These are company people who move around geographically during their careers and have performance assessed on the basis of contract success.

Cross-pollination with other corn crops can contaminate hybrid corn seed and render it unregistrable as certified seed. Thus, Pioneer insists that all corn grown by a smallholder group (a specified geographical area) must be Pioneer hybrid seed corn. Since a neighbouring village or farmer group is a potential source of contamination, Pioneer may need to also capture their production, resulting in clusters of contracting groups. Individuals not participating in the contract may receive a payment from the company for not growing corn if they have a previous history of growing corn. In this situation, the grower

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<sup>1</sup> The term 'consumption corn' refers to grain, while corn delivered to the Malang plant is 'on the cob' with husk and usually the stem intact. As a rule of thumb, from Birchall, (2002), approximately one half of the mass weight of such corn is grain hence the 'grain equivalent' price paid to contractors is Rp. 2300 per kg, considerably higher than the consumption price.

surrenders use of the land for the growing season and a hybrid corn crop is planted by another grower. The compensation, called 'rent', is set at the gross margin for consumption corn. Usually, at most, only three or four growers in the group are affected by this arrangement.

Pioneer employs around 30 full-time staff at head office in Malang in management and administrative positions in the office and processing facility. An additional 300 people are employed in the processing facility on a part-time basis of whom around half are female. In addition, hybrid seed corn husbandry is labour intensive. For example, it takes 60 people one day to de-tassel one hectare and many day labourers are employed casually at specific points in the growing cycle.

Finally, Pioneer faces competition for groups and villages to produce seed corn from the multinational corporations Monsanto and PC, but it is not clear how fierce this competition is. These firms are more diversified than Pioneer.

From the smallholder's perspective, the contract provides a low-cost way to access seed corn markets using Pioneer's well established international marketing network. Without this network, and the processing facility in Malang that supports it, it seems unlikely that smallholders would produce this product on a large scale, if at all. The contract provides a credit facility in cash and kind which allows smallholders to overcome the constraints they normally face in credit markets with collateralisation of future production and reduced borrowing costs, resulting in credit at commercial bank rates. The contract also allows production diversification, reduces risk associated with high-cost farm inputs and provides a guarantee of price regardless of quality. There was no evidence of contracts dominating farm plans or reducing diversification. High levels of entry to and exit from the contract indicated there was little, if any, dependence on the contract in meeting basic income needs. Finally, growers participating in the contract receive high-quality information on how to grow a technically complex crop in a situation where it is unlikely that the same type of technical help could come from government extension services.

## Case study 2: Balinese seed rice production

PT Pertani is a government-owned agribusiness firm centred in Jakarta. It was established by the Indonesian Government in the Sukarno era to provide seed to farmers. It produces seed in all provinces for crops including soybean, corn, rice and peanuts. Production of seed rice by PT Pertani (Bali) was about 2000 tonnes last year with about half sold in Bali and the

remainder distributed in East Java. As well as producing and selling seed under contract the company sells fertiliser and pesticides to farmers. PT Pertani is government owned but not subsidised and is expected to break even at both national and provincial levels.

Since the start of the rice seed contract in Bali in 1988, the number of farmers under contract has varied between 200 and 300. All growers must be certified seed producers to participate in the contract. Certification is undertaken by Balai Pengawasan Sertifikasi Benih (BPSB), who require farmers to undertake training prior to certification. About 5% of Balinese farmers are certified for seed rice production and PT Pertani faces considerable competition from private producers of seed rice.

The PT Pertani contract terms are relatively simple. Farmers are provided with free foundation seed and extension advice and must deliver at least 75% of production to PT Pertani. Up to 25% of production can be retained for the farmer's own use and diversion to other markets is forbidden. Payments are made in cash to the head of the grower group (*Pakaseh*) and usually no advances of farm inputs or cash are provided. This was different last season when the contract was altered to take advantage of special government credit provisions where Bank Madiri provided credit for farm inputs. The bank advances money to PT Pertani who then advance farm inputs to the *Pakaseh* for distribution to growers. There are no cash advances to the *Pakaseh* or growers.

Farmers usually receive four visits during the growing season from BPSB extension officers who are paid to undertake an advisory and monitoring role. Visits occur at land preparation, 30 days after sowing, again at 40–60 days at the pre-flowering stage and then a week prior to harvest. Quality is important and about 15% of contracted production is rejected following visual inspection prior to harvest. Rejected production is subsequently sold as consumption rice in the spot market.

The husbandry for the seed rice is similar to that for consumption rice in terms of water use and weeding, however more and better fertiliser is used, resulting in a yield premium of about 20%. Crops usually yield 6–7 tonnes per hectare. Farmers receive the spot consumption rice price plus 5% and were paid Rp. 1400/kg last season. Other private firms and individuals produce seed rice, which they sold through the seed-rice spot market last season for Rp. 3000/kg. Although prices paid to PT Pertani farmers were lower than the price available to private seed rice producers, PT Pertani reported that farmers saw the costs of the price discount being offset by other benefits provided by company and

associated government agencies. These include free foundation seed, seed processing and drying (producers did not have to own their own drying equipment), a guaranteed market and the provision of extension advice. The cost of these services was Rp. 2250/ha, a token charge.

Understanding the role of the *Pakaseh*, who is in charge of each irrigation area, is critical in understanding the contract. PT Pertani contracts only with the *Pakaseh* who represents the interests of 50–60 farmers in his area participating in the contract. PT Pertani tells the *Pakaseh* which paddies it wishes to use and the desired hectareage. The contract is signed only by the *Pakaseh* and not by growers themselves and payments for delivery under the contract are made in cash to the *Pakaseh* who distributes it to the growers. Interviews revealed that the *Pakaseh* has considerable power, however precisely how much was never clear. For example, the manager at PT Pertani said the *Pakaseh* chose the cropping allocation for the whole irrigation area (*subak*) in terms of hectareage of seed rice, consumption rice and soybean leaving only minor production decisions to individual farmers. He also expressed the view that many contracted smallholders did not actually know who they were contracted to. It was clear to us that there was a high level of coordination amongst growers and that, in some senses, the institution of the *subak* could be viewed as a single decision-making unit. More research of a sociological nature is needed in this area.

Preliminary analysis of the survey data indicates that the seed rice contract has no significant impact on the productivity of farm capital. In terms of the possible welfare gains from contracting outlined in the previous section, the main benefits are in risk management. Effects on access to markets, credit access and information are likely to be minimal. The seed rice market is a mature market where the only barriers to entry are the requirement for certification as a seed producer and access to drying facilities. Except in the last season where contractors could use the contract to access government-subsidised credit, only foundation seed is advanced under the contract and this would not make any significant contribution to overcoming credit constraints. The contract does provide extension and hence would overcome problems resulting from lack of information, however, since husbandry for seed rice is similar to that for consumption rice and because the certification process includes a training component, the benefits here would be limited. The major advantages of the contract for contractors are in reducing risk. They receive an assurance that their product will be purchased at harvest and the contracted production constitutes a form of production diversification.

### Case study 3: Lombok broiler production

Nusantara Unggasjaya Mataram is owned by a Thai multinational firm that produces poultry and pigs under contract and participates in livestock feed markets in Thailand, Indonesia, Malaysia and China. It has over 70 enterprises throughout Indonesia with Nusantara Unggasjaya Mataram, operating in the Lombok broiler market, being its smallest with only 20 staff.

Nusantara Unggasjaya Mataram currently uses contracts with smallholders to produce around 10,000 broilers per day on Lombok. It has operated on Lombok since 1998 and since starting operations has carved out a stable market niche for broilers. When the firm established in Lombok, daily consumption of *kampong* chickens was around 5000. After five years of contracting this figure has not changed, indicating strong market segmentation. An examination of prices of the two products supports this conclusion since *kampong* chickens, which are favored in the local market for their tastiness, leanness and low chemical content, return about Rp. 18,750/kg compared to broilers which fetch about Rp. 5000/kg. The firm claims that the major competing product in consumption is wild fish, which is produced on a seasonal basis. All Lombok broiler production is consumed locally and the firm claims the market is 'mature' with little scope for expansion. Prices of fish and broilers appear to be inter-dependent and fluctuate quite widely. Interestingly, Nusantara Unggasjaya Mataram's broiler production is currently operating at a loss with producers receiving around Rp. 7000/kg under the contract.

About 250 farmers participate in the contract, each with about 2500 birds at any point in time, giving a total broiler production of about 600,000 birds in each cycle of production.

To enter the contract, the farmer must provide a chicken coop from his own resources and have Rp. 20M (AU\$2,000) in capital. Once in the contract they receive day-old chicks to rear to 1.8–2.0 kg liveweight, which takes 35–38 days depending on target weight. Production must follow the firm's guidelines with regard to input use and the firm provides extension and advice, day-old chicks (imported from nearby Bali), feed, veterinary products and other chemicals on a credit basis. No cash advances are made. Upon reaching the target weight the chickens are delivered to the firm which sells them live directly to consumers. The firm does no processing of the broilers.

Growers currently receive about Rp. 7000/kg with the price determined by a cost-based formula where feed costs are the dominant item. The firm is domi-

nant in its output market in Lombok and can doubtless exercise some market power, however it would be constrained in this activity by competition from Balinese broiler production. It was not clear what type of power the firm could exert in the feed market or whether the firm used its market position to charge 'captive' growers unreasonably high prices for feed. Growers are required to purchase feed from the firm however they would be aware of feed prices in nearby Bali. This introduces an element of contestability since if the firm were too 'out of line' with Balinese feed markets experienced contractors could, presumably, undertake ex-contract broiler production by sourcing feed from Bali.

Final payments to farmers are made 14 days after delivery, after credit is deducted. Farmers receive a cheque that they convert to cash in an 'over-the-counter' transaction. There appear to be few issues about quality since apparently 'every chicken has its price'. That is, underweight or otherwise defective birds can be sold at a discount in the spot market for consumption and the discount passed back to the producer under the contract terms.

The firm claims that contract participation is stable, that there is a queue of farmers wishing to participate and that exits are restricted to about 3% of participants per year who are asked to exit because of alleged dishonesty. The major problems for the firm are technical such as unreliable electricity and maintaining a constant temperature. Other issues concern the consistency of management.

The contract is negotiated directly between the firm and the grower who is usually literate. The contract is not signed or witnessed by third parties. Contractors do not belong to any special groups specialising in broiler contracting and the only meeting of contractors is when the firm's extension officers talk to groups of 16–20 contracted farmers.

These are poor farmers compared to those participating in the East Javanese seed corn and Balinese seed rice contracts. The benefits they derive from contract participation are considerable and fall neatly into three of the categories of benefits outlined previously. The firm provides access to the broiler market in Lombok — however there are no barriers to entry so farmers could sell broilers at the market price achieved by the firm anyway. Feed costs are high and farmers receive advances for both feed and other inputs which are deducted from the settlement price. It seems likely that this allows farmers to overcome credit constraints however, further empirical work is needed on our survey data to confirm this. The contract is a major form of diversification for farmers as production risk is low and price risk is born by the firm. The firm representative stated that the firm is concerned about continuity of supply and when

prices fall on a seasonal basis (related to fish catch) the firm takes losses on production rather than lose contractors. The firm provides guidelines for the fairly chemical intensive production and contractors would have little chance of easily acquiring this type of expertise without participating in a contract. A possible negative associated with the contract is the possibility of 'capture'. Contractors buy into the contract, investing about Rp. 20m which is a considerable sum and would not be easily written off if contract terms were to sour. We found no evidence of deteriorating contract terms.

## Discussion and Conclusions

In each of the case studies village level organisations played some role in the execution of the contract. Both the seed corn and seed rice contracts made considerable demands on village resources for land and irrigation water and required a collective commitment by the grower or irrigation group to enter the contract, even when all members were not directly participating in it. This was particularly so for the seed corn contract where the husbandry requirement that seed corn be grown in isolation from consumption corn dictated arrangements to compensate farmers who traditionally grew consumption corn and were no longer able to do so. The broiler contract made no demands on land or irrigation water and traditional village organisations played no role in it. The firm created specialised broiler producer groups to facilitate extension however the linkage dependence of these groups was such that membership of the group was solely related to contract participation. Other contracts we examined, mangosteens in Bali and dairy in East Java, were much the same in that the contracted production made few demands on collective resources and the only producer groups associated with the contract were those created by the contracting company for extension purposes.

Both Pioneer and PT Pertani receive tangible benefits from dealing with groups rather than individuals. The costs of drafting, negotiating and enforcing contracts are lower if the firm negotiates with 40–50 heads of grower groups, as in the East Java contract, rather than 10,000 individual smallholders, or five or six heads, in the Bali contract, rather than 200–300 growers. Grower differences within the groups can be solved internally using traditional dispute resolution systems and written contracts need only be struck with the heads of the groups. In terms of enforcement costs, the firms benefit by selecting contract participants at group rather than individual level. Since providing the contract serves collective interests, the group has incentives to deal with contractually errant

members. Enforcement costs, an important source of contract failure elsewhere, become a problem that can be dealt with by the group using its existing power structure. Maladaptation costs, when contract specifications are not met, are also an important source of contract failure. Both Pioneer and PT Pertani are in the enviable position of being able to sell sub-standard seed to the consumption market hence can offset some of the costs incurred when quality is below standard. However, again, the grower group plays a role in preventing maladaptation to the contract. Members have a collective interest in preventing any individual from departing from contract growing guidelines since this would jeopardise the contract for the whole group and not just for the errant member. Set-up and running costs associated with governance are also greatly reduced in a group environment since the firm field employee works at grower group level. His costs of conflict resolution are reduced by the collective nature of grower interests and regular meetings of the group allow him to spend less time face-to-face with individuals. Finally, financial transactions are supervised by the heads of the grower groups at group level including grower payments and, in the case of Pioneer, this includes provision of contracted inputs. We concluded that both Pioneer and PT Pertani achieved transacting scale by contracting with farmer groups that are like small firms with powerful chief executive officers rather than with many individual smallholders and that this accounts at least partly for the success of these contracts.

The power relationships between heads of grower groups and others associated with the contract were never clear. The head of the grower group was the link between the growers and the contracting firm and derived considerable authority as the sole signatory of the contract as well as from the financial arrangements. In the case of Pioneer, both advances of factors such as fertiliser and payments for contracted production were channelled through the head of the grower or irrigation group and, in the case of PT Pertani, final payments were made by the head. It was not clear how much transparency there was in these arrangements however the comment by one contracting firm representative that 'growers did not actually know who they were contracting to' indicates that information flows within the grower group may not have been very substantial when it came to contract detail. Further research is needed to fathom the true role played by the head of the grower group in these situations however, on the surface at least, it seems to be some type of principal-agency problem. The head of the grower group presumably services his own interests by trading off the respective interests of contract growers, non-contract growers who

are also group members, the contracting firm and the broader village constituency.

Keeping in mind the small number of case studies examined, some general conclusions can be drawn about village level organisations and contract farming:

- When farm contracts do not tie up collective resources such as water or large amounts of land then traditional or pre-existing grower groups do not seem to get involved in the contract. In this situation, the only groups are those the contracting firm sets up for extension purposes. This was the case with the broiler contract and also for mangos-teen and dairy contracts that we encountered when setting up the larger study.
- When contracts make significant demands on land and water, as with the seed rice and hybrid corn contracts, there is a need for group involvement and this need is met by the traditional grower or irrigation group which may become central in the execution of the contract.
- When traditional village organisations are involved in contracts this confers considerable savings in transaction costs on the contracting firm.

The literature on contract farming is abundant, as is the case with rural cooperatives, however there are few links between these bodies of knowledge. In our larger study we reviewed around 150 papers on contract farming (Simmons, 2003) and, generally, most of the studies focused on either the effect of the contracts on smallholder productivity or on agency problems associated with contract design. Few studies paid much attention to the role that village organisations play in contract farming. Glover and Kusterer (1990) acknowledge that farmer groups were important in several of their case studies. Dorward (2001) fits them into his 'ideal' contract farming framework and Coulter et al. (1999) discuss how NGOs may work through village organisations to make contracting more effective. There is also a small literature on the use of political grower organisations in protecting farmer interests against aggressive behavior by contracting firms that is not directly relevant to our discussion (Glover, 1987; Singh, 2000). It was not possible to conduct a very wide review of the cooperatives literature for this workshop however the case studies surveyed did not pay much attention to contract farming (Shah, 1995). In case studies of cooperatives, contract farming is seen as an element in linkage dependence however the synergies between cooperatives and farm contracts and the role of contracts in reducing transaction costs are not addressed. There seem to be two different and very separate literatures for horizontal and vertical farm alliances respectively, yet, as our case studies

reveal, there is a need to better understand the relationships between the two types of arrangements.

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# Economic rationale, challenges for and future development of cooperatives in Indonesia

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## Introduction

COOPERATIVES are one of the economic institutions which face many challenges in the changing national and world economy. These challenges include the more competitive market, the globalisation of the market, deregulation and privatisation, and the autonomy of some regions within the country. Most developing countries also tend to reduce inefficiency in the public sector and cut public spending because of limited funding. Hence, cooperatives as an economic and social institution struggle to survive.

In Indonesia, cooperatives also face challenges from economic changes, especially after the economic crisis, which hit the country in the middle of 1997. The huge government debt, the collapse of the banking sector and the bankruptcy of many companies because of economic crisis, may influence the economic and business environment for cooperatives.

External and internal factors of cooperatives influence their capability to cope with unexpected events. This paper attempts to analyse the economic rationale, challenges and future development of cooperatives in Indonesia, using the coconut industry in North Sulawesi as a case study.

## Historical background and cooperative development

The cooperative movement in Indonesia, as in other Asian countries, was greatly influenced by the development of cooperatives in Europe, which was an attempt to fight poverty and exploitation of human rights (Sharma, 1997). In Europe, the movement was initiated by the working classes, farmers, artisans and other lower class groups due to the deteriorating socio-economic conditions of workers caused by the industrial revolution. The causes of the cooperative movement in Asia, including in Indonesia, were slightly different from those in Europe. The movement was affected by the land revenue system

enforced by the colonial powers. It created large-scale landless labour and rural indebtedness in many regions in Indonesia (Sharma, 1997).

The first consumer cooperative in Indonesia was built in 1910 by Budi Utomo, an organisation of Javanese Medical Schools in Jakarta. It was followed by a cooperative built by Sarekat Islam, the political organisation, in 1913. As a socio-economic organisation, the cooperative has a democratic content, which might encourage national independence movements. In the case of Indonesia, the Netherlands Government also suspected that the cooperative could be utilised as a political tool and encourages people to live independently (Sharma, 1997).

The cooperative movement in Indonesia after independence in 1945 can be segmented into the KUD (Koperasi Unit Desa or *Village Unit of Cooperative*) and non-KUD (Prakash, 1997). The KUD is the rural, multipurpose cooperative institution at the village level whose members come from the rural population and include farmers, farm workers, small traders and fishermen. In contrast, the non-KUD segment includes thrift and credit cooperatives of civil servants, armed forces, industrial workers and traders. While the non-KUD segment is not organised vertically, the KUD is structured vertically from provincial business federations of KUDs (the Puskuds) to a national federation (the Inkud). The vertical integration of KUDs is established by government with the main objective to maintain national food supplies in collaboration with Bulog (National Food Agency). KUD activities are processing, rice milling, and distributing essential commodities including farm inputs. KUDs were also provided with several services and facilities, warehouses, rice milling units, drying floors, transportation equipment, a monopoly on distribution of chemical fertilisers and disbursement of farm credit (Prakash, 1997). The economic performance of the KUD and non-KUD cooperatives is shown in Table 1.

Table 1 shows that about 10% of KUD and civil servant cooperatives are non-active and the number is even greater for other types of cooperatives. While there are fewer KUD cooperatives than other types, they have the most members. However, the dividends paid to KUD members are far below those paid by civil servant cooperatives. As organisations based on active membership, cooperatives encourage members rather than being selective. Cooperatives usually have a small number of employees and not all of them have a manager. It can be seen from Table 1 that the number of managers is less than the number of cooperatives.

In some cooperatives, the organisation is built because of government projects or programs. The government gives a commission to the cooperatives that distribute fertiliser and farm credit. In this case, the cooperative will still exist if the government program continues. It can be seen in Tables 2 and 3 that the number of cooperatives is closely related to the level of credit realisation.

The government increased farm credit as part of the economic recovery program after the economic crisis in 1997 (Table 2). Table 3 shows that the number of cooperatives also increased dramatically between 1997–1998 and 1998–1999. The lack of government funding decreased the level of credit available to farmers in 1999–2000, which will challenge the cooperatives in the future. The trend is for government support to decrease, leaving the cooperative struggling to survive. The next section will analyse the economic rationale for cooperation and

the benefits of integrating the economic activity of cooperatives.

### Economic rationale

From an economic point of view, the cooperative type of organisation can be applied to coordinate members that usually have small-scale businesses. The corporation of many small-scale farms or firms can be seen as vertical integration, horizontal integration, or combination. Vertical or horizontal integration is the vertical or horizontal coordination of two or more farming systems, firms, or individual economic players, which are operating together vertically or horizontally.

Vertical integration is what occurs when two or more cooperative members operating at different stages of production, processing, and marketing combine under a single cooperative management while vertical coordination is attained through production or marketing arrangements (Seitz et al., 1994). In the production activity, the cooperative member of the processing firm requests specific products, to be supplied by the cooperative member of the production firm. The processing firm usually provides financial and management services to the production firm. In the marketing activity, the production firm supplies a certain quantity and quality of output at a stated price to the processing or marketing agent.

From an economic point of view, a vertically integrated cooperative makes sense if the benefits

**Table 1.** Cooperative performance by type (December 31 1999)

Type of Cooperative	Active (Number)	Non-active (Number)	Total	Member (person)	Manager	Employee (person)	Dividend (Rp million)
KUD	7931	689	8620	11,007,785	7160	53,802	82,563
Civil servant	15,314	1446	16,760	2,778,637	4660	21,413	159,375
Others	53,340	10,493	63,833	8,742,777	10,637	95,323	301,725
Total	76,585	12,628	89,213	22,529,199	22,457	170,538	543,664

Source: Calculated from Ministry of Cooperative Home Page: [www.depkop.go.id](http://www.depkop.go.id), accessed March 12, 2003

**Table 2.** Recapitulation of Farm Credit in Cooperatives (1996–1997 to 1999–2000 (Million Rupiah)

No.	Year	Platform	Credit Realisation	Cooperatives ( Number)	Hectares
1	1996–97	216,150	231,333	2541	1,138,022
2	1997–98	400	374,631	3938	740,760
3	1998–99	8,870,142	8,336,329	9517	5,746,235
4	1999–2000	1,775,600	1,108,226	3586	958,533
5	MT 2000*	0	5904	34	3896
	Total	11,261,892	10,050,519	19,582	8,583,550

\*Data up to July 2000

Source: Ministry of Cooperative Home Page: <http://www.depkop.go.id>, accessed March 12, 2003

**Table 3.** Number of Cooperatives in Indonesia that Distribute Farm Credit (by Province 1996–97 to 1999–2000)

No.	Provinces	Year (Number)					Growth (%)		
		1996–97	1997–98	1998–99	1999–2000	2000*	1996–97 to 1997–98	1997–98 to 1998–99	1998–99 to 1999–2000
1	DI. Aceh	65	40	271	72	7	-38.46	577.50	-73.43
2	Sumatera Utara	225	262	779	93	0	16.44	197.33	-88.06
3	Sumatera Barat	35	289	359	54	16	725.71	24.22	-84.96
4	Riau	7	42	71	0	0	500.00	69.05	0.00
5	Jambi	22	231	192	36	0	950.00	-16.88	-81.25
6	Sumatera Selatan	81	102	530	81	1	25.93	419.61	-84.72
7	Bengkulu	33	111	97	2	0	236.36	-12.61	-97.94
8	Lampung	180	122	256	44	0	-32.22	109.84	-82.81
9	DKI. Jakarta	0	0	0	0	0	0.00	0.00	0.00
10	Jawa Barat	258	504	825	1225	0	95.35	63.69	48.48
11	Jawa Tengah	272	434	1708	618	0	59.56	293.55	-63.82
12	DI. Yogyakarta	11	48	129	52	0	336.36	168.75	-59.69
13	Jawa Timur	426	596	1579	644	8	39.91	164.93	-59.21
14	Bali	120	174	152	79	0	45.00	-12.64	-48.03
15	Nusa Tenggara Barat	84	94	165	89	0	11.90	75.53	-46.06
16	Nusa Tenggara Timur	49	52	110	29	0	6.12	111.54	-73.64
17	Timor-Timur *	0	0	51	0	0	0.00	0.00	0.00
18	Kalimantan Barat	19	115	161	7	0	505.26	40.00	-95.65
19	Kalimantan Tengah	6	5	72	8	0	-16.67	1340.00	-88.89
20	Kalimantan Selatan	93	94	213	110	0	1.08	126.60	-48.36
21	Kalimantan Timur	25	29	128	14	0	16.00	341.38	-89.06
22	Sulawesi Utara	30	106	436	0	0	253.33	311.32	0.00
23	Sulawesi Tengah	26	41	210	2	0	57.69	412.20	-99.05
24	Sulawesi Selatan	396	258	766	278	0	-34.85	196.90	-63.71
25	Sulawesi Tenggara	47	69	110	11	2	46.81	59.42	-90.00
26	Maluku	11	86	42	0	0	681.82	-51.16	0.00
27	Irian Jaya/Papua	20	34	105	38	0	70.00	208.82	-63.81
	Total	2541	3938	9517	3586	34	54.98	141.67	-62.32

\* Data up to July 2000

Source: Ministry of Cooperatives Home Page: [www.depkop.go.id](http://www.depkop.go.id), accessed March 12, 2003

outweigh the costs of integration. In vertically integrated firms, supply of key inputs is assured, market failure due to externalities can be corrected by internalising those externalities, the firm can avoid government restrictions and regulations, better exploit or create market power, and eliminate the market power of other firms (Carlton and Perloff, 2000). Seitz et al. (1994) list some of the reasons for vertical integration as: a more reliable supply, economies of scale, reduced price uncertainty and transaction costs, assurance of desired product characteristics, and diversification or reduction of risk.

In horizontal integration, one of the economic reasons for inter-linkages of the small-scale firms of cooperative members is that the large-scale firm tends to be more efficient and more competitive than the small-scale firm because of economies of scale (ie changes in the cost of production associated with a change in the amount of the fixed factors of production possible in the long run, when fixed costs

become variable). The increasing return to scale is hoped to be achieved as cooperative members join together with their production activity.

The two dominant factors which determine the optimum firm are technical and pecuniary (Seitz et al., 1994). The technical relationships among inputs and outputs determine the shape of the firm's production function. The relationship causes the long-run average cost curve to decrease and then increase as the size of the plant increases. The pecuniary factors refer to the prices paid and received by the firm. Many large firms purchase inputs at discounted prices because they buy in large amounts. They negotiate contracts or make arrangements with suppliers to receive discounts, lower delivery charges, or other savings. In addition, large firms may realise higher unit returns on sales by achieving efficiencies in marketing, hauling, or sales contracting. They spread their overhead costs over the larger number of units of output produced by a larger firm. The

minimum average cost of production occurs when a manager combines the technical and pecuniary factors into optimum arrangements. The optimal size of the industries will vary widely between industries. In this case, cooperatives can act as a large-scale firm, which integrates members' production activity to gain the benefits of technical and pecuniary factors.

It is clear that the vertical and horizontal integration of small-scale enterprises, which can be associated with cooperative members, will benefit them. However, the cooperative may not realise the advantage of the integration. Historically in Indonesia, most cooperatives were established by the government. Some cooperatives did not survive after the government stopped subsidising them. Cooperatives have faced many challenges in the changing economic environment. In the next section, these challenges are analysed and the future development of cooperatives examined.

### Challenges and future development

Cooperatives in most developing countries, including Indonesia, are faced with several challenges. These come from the national and global economies. Changes in the world economy can be identified as globalisation and liberalisation, while the change in the national economy can be seen from the greater openness and deregulation of the Indonesian economy, privatisation, bank restructuring and regional autonomy. These changes have increased the competition faced by cooperatives.

On international markets, Indonesia has already ratified world and regional agreements to eliminate trade and non-trade barriers. These agreements include AFTA among the ASEAN countries, APEC among the Asia Pacific countries and WTO globally. As a consequence, Indonesia must open its trade and increase its competitiveness in order to survive on the world market. As economic institutions, cooperatives must face this reality and try to increase their competitiveness.

In Indonesia itself, economic policy has been moved from protectionism (during the several years after independence in 1945), to outward orientation (late 1960s to the 1980s) and deregulation and openness (during the 1990s) (Oktaviani, 2000). The government has launched numerous trade and investment reform packages since 1989 in order to face the more open and competitive world economy. Since 1989, the restrictions on trade, including tariff and non-tariff barriers, have gradually been eliminated. Trade regulations have followed investment

regulations to encourage direct foreign investment. The year 1994 saw a significant change in investment: essentially, unrestricted direct foreign investment was permitted for the first time in all sectors.

The economic performance of cooperatives is usually based on a majority of members who are small, marginal and resource-poor farmers. As individuals, they have no bargaining power. The members usually have an objective to produce and market more to meet their consumption and production requirements. With limited capital and education they cannot invest in high-technology farming. The government usually supports, or even gives, monopoly power to cooperatives to distribute fertilisers and farm credit, to have irrigation facilities and to support market intelligence. In Indonesia, almost 90% of KUDs are engaged in rice procurement and distribution of farm input and consumer goods (Prakash, 1997).

Since mid-1997, there has been a dramatic change in Indonesia's monetary economy. The exchange rate depreciated from 2658 Rp per US\$ before August 1997 to a low point of 15 000 Rp per US\$ in January 1998 (Fane, 1999). The crisis worsened with the lack of confidence in the financial sector and overall economic activity. The financial crisis has acted as an inducement for the government to deregulate in several areas, including trade policy. The government also eliminated Bulog's monopoly over the import and distribution of sugar and rice, and over the distribution of wheat flours. The government also reduced the fertiliser subsidy<sup>1</sup> and abolished the pesticide subsidy. These changes contribute to the economic performance of cooperatives, especially KUDs, which have monopoly power through the Bulog monopoly.

As small-scale types of economic institutions, cooperatives are also being protected by the government through Presidential Decree No. 99 of July 1998. This decree is about sectors/types of businesses reserved for small-scale enterprises and sectors/types of businesses opened to medium-scale or large-scale enterprises under a partnership requirement (Foster Father Scheme (Kemitraan)). The policy is based on the argument that small-scale enterprises (SEs) are community-based activities which have a strategic position, potential and role to translate into reality a more balanced national economic structure and equal distribution of development on the basis of economic democracy. On the one side, SEs need to be protected from unfair competition, but on the other, it is necessary to give them an opportunity to develop

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<sup>1</sup> This was the case in March 2003 although the situation has changed since then.

their contribution to optimise national development. A presidential decree is needed to determine sectors/types of business reserved for small-scale enterprises and sectors/types of business open to medium-scale or large-scale enterprises under a partnership requirement. However, decree no 99/1988 is the type of regulation which creates a barrier to entry and therefore against competitiveness. Hence, the government evaluates this regulation and tends to deregulate it (Oktaviani, 2001).

The changes to the Indonesian and world economies influence the role of state, the cooperatives and the apex organization (the cooperative's board of representatives). For some cooperatives, these changes to the economic environment mean they cannot develop and become autonomous. A suitable environment is needed for creating a cooperative and enabling it to grow (Wardhono et al., 2003).

Prakash (1998) argues that the challenges for cooperatives in facing globalisation and an open market economy in developing countries are:

1. Improving the management skills of managers and those who provide advice to cooperatives
2. Establishing a marketing intelligence system to enable farmers to follow market trends
3. Reducing the uncertainty of farm input supply
4. Establishing business federations through cooperative clusters
5. Being aware of quality controls and standardisation
6. Participating in natural resource conserving efforts
7. Providing information to farmers on the implications of restructuring, globalisation and the WTO agreement.

Rather than employing managers, cooperatives need to improve the management skills of their members to be able to work efficiently. With these skills, the members can manage the cooperative themselves, eg managing production in order to maximise output quality. Establishing a marketing intelligence system will give members an opportunity to understand market trends and so plan their strategies for production and marketing. To be prepared for economic changes, cooperatives should be able to reduce the uncertainty of farm input supply, such as the quality of seeds, fertiliser, credits and extension services. Quality controls and standardisation are also important to compete on the open market. The cooperative cluster in vertical or horizontal integration is beneficial in order to undertake primary agri-processing, marketing of local products and to cover financial requirements. The economic rationale for integration is that it will increase the cooperative's efficiency. Another challenge is to provide information to cooperative members on the

issues of restructuring, globalisation and trade agreements. Other information that is also important is world supply and demand, and market price for exporting and importing goods. The information on climate change is also important for the production type of cooperative.

Based on those challenges, the future development of cooperatives is needed, not only for the managers but also for the members. A conducive business environment is also needed for the adjustment of the cooperative. Wardhono et al. (2003) argue that several future developments for cooperatives include adjustment to the new trade regime, building modern management and professionalism, and education and training. A conducive business environment includes better access to markets, credit and information. Infrastructure is also important. The synergy of both external and internal factor development will help cooperatives to face the competitive world market.

### **The coconut industry in North Sulawesi, a case study**

Coconut is an export commodity for Indonesia. Together with products such as rice, pepper, nutmeg and cloves, coconut was a commercial crop, even before the arrival of western powers to Indonesia. Native coconut growers in Donggala and Minahasa produced more than 95% of total coconut exports from Indonesia during the colonial period (Purwanto, 2002). Coconut has also become a popular cash crop in Minahasa (North Sulawesi). The main native coconut producing areas in Minahasa were the districts of Manado, Tonsea, Tondano, Amurang, Kawangkoan, and Tarahan. About 70% of the population in these districts was involved in copra production in the 1930s (Purwanto, 2002).

Data from 1999 also shows coconut as one of Indonesia's main agricultural products. Coconut was the main source of income for almost 70% of North Sulawesi's population (Usman et al., 2001). In terms of weight, coconut was the main output in North Sulawesi (Table 4). Most coconut production (more than 50%) is in Minahasa district. In order to increase value-adding in the agricultural sector, including coconut, the local government tries to attract the investor to invest in agricultural processing manufacture. The new regulations for regional autonomy in Indonesia enable the district to plan its regional development.

Income from coconut and copra is no longer being received since the coconut price has fallen below the cost of production (Usman et al., 2001). The farmers' bargaining position has weakened with the cooking oil industry company PT Bimoli purchasing

**Table 4.** Primary agricultural commodities in North Sulawesi, 1999 (thousand ton)

Districts/Province	Rice	Coconut	Clove	Ocean Fish
Minahasa District	42.3	153	3.9	6.4
Bolmong District	188.2	48	0.6	7.5
North Sulawesi	231.9	261	5.2	153

Source: North Sulawesi in Figures, 1999

a large proportion of copra. Bimoli can purchase copra independently and has a contract purchasing agreement with a specific price for a two-week period. Failure to fulfill the contract will reduce the contract price. The basic calculation of the copra price from PT Bimoli and the discussion to determine a reasonable price are discussed in Usman et al. (2001).

This type of contract is a type of vertical integration which has weakened the position of many small-scale coconut farmers. In this case, it is an example of the cooperative type of vertical and horizontal integration. APEKSU (Association of North Sulawesi Coconut Producers) has criticised the purchasing price of PT Bimoli, which has a quick adjustment for declining fob price and very slow adjustment for a rising fob price. However, they have not been successful. Horizontal integration among farmers and vertical integration among farmers and other processing industries are needed, not only to increase the bargaining power of small-scale farmers in front of PT Bimoli, but also to create options for coconut processing and production. Instead of producing copra from coconut meat, many parts of coconut can be processed as commercial products. The trunks of coconut trees can be made into furniture. Coconut water can be processed into *nata de coco* (sweet jelly from coconut juice) and coconut shell can be processed into charcoal and many kinds of souvenirs.

Another alternative to develop the coconut industry in North Sulawesi is to have a partnership commitment from the government and the cooperative and banking sectors. A pilot project was run in Gorontalo in 2000 through the PARUL (Poverty Alleviation through Rural/Urban Linkage) Project, a Government of Indonesia, BAPPENAS, United Nations Development Program (Evans, 2000). The project is a burning pit project in Gorontalo (it was formerly in North Sulawesi) which provides a revolving fund to build a burning pit for charcoal production, which is proposed by Gorontalo's Kabupaten Implementation Team (KIT Gorontalo). Two cooperatives act as loan receiver, PARUL and KIT Gorontalo work as facilitators and coordinators of fund management, while Bank Sulut Limboto assists and organises the money flow. The buyer

works as a 'foster-father' in the system that promises to buy all the charcoal produced by the cooperative with a market price. Details of the project are given in Evans (2000).

The system works well because there is a certain buyer for the charcoal and a bank controls the flow of money. There is a MoU (Memorandum of Understanding) among cooperatives, the bank, and the buyer. Therefore, these parties have an agreement with a win-win solution if there are some changes in the future. This type of cooperation can be also applied to the coconut industry. The bank can give a loan to the APEKSU and farmer groups at the lower level so they can produce coconut products other than copra and collaborate with the definite buyer. In this case, the North Sulawesi government agency can act as a facilitator. The external environment, such as market, credit and information access, is already favourable in this system. Other external environmental factors, such as infrastructure, can be developed by the government. The internal development of cooperatives is a challenge for the future development of the coconut industry in South Sulawesi.

## Conclusion and Recommendation

It is argued that vertical and horizontal integration of small-scale enterprises, which can be associated with cooperative members, will be beneficial to those members. However, most cooperative establishments in Indonesia will not survive once the government subsidy ends.

The challenges facing cooperatives are improvement of managerial skills, establishment of systems of market intelligence and business federations and the provision of information on quality control and anything else related to their activities. The future development of cooperatives is needed, not only for managers, but also for the members. The business environment also needs to improve in line with the adjustment of cooperatives.

The case study of the coconut industry in North Sulawesi provides an example of monopsony in the industry. The cooperative type of horizontal integration among farmers and vertical integration among farmers and other processing industries is needed,

not only to increase the bargaining power of small-scale farmers, but also to create more options for coconut processing and production.

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# Cooperative model development of agribusiness in Indonesia<sup>1</sup>

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## Introduction

THE agricultural development paradigm has shifted from production oriented to a broader agribusiness spectrum. Within this spectrum, one of the Ministry of Agriculture's main development programs has been focused on the development of the agribusiness of reliable agricultural commodities in response to changes in the following strategic international environments: (1) increasing pressure to implement the GATT/WTO agreements; (2) the transportation, telecommunication and tourism revolutions; (3) the global movement of rehabilitation and conservation of natural resources and protection of human rights; and (4) a global trend towards improvement of product quality. Changes in the following domestic environments also have impacts: (1) macro-economic conditions; (2) social, cultural and political conditions; and (3) the demographic structure and problems of poverty. The agribusiness development programs may be viewed as being successful until a year before the adverse economic crisis in 1998. Since then, there has been a slow down in agribusiness activities.

Conglomeration was seen as contributing to the failure to bring about a significant growth in the Indonesian economy in general and the agribusiness sector in particular and in improving the welfare distribution of society. Only a very small group of people become very rich, while the majority remains very poor. Conglomeration has been shown to exclude the development of most Indonesians.

Cooperatives built many decades ago, therefore, remain relevant for improving the economy of the people since their main objective is to improve the welfare of their members. In the agribusiness sector, farmers constitute the only members of cooperatives. In this situation, the most challenging issue to be raised is how cooperatives can contribute to the

development of the agribusiness sector through introduction or development of: (1) appropriate contract farming systems; (2) an appropriate financing system; and (3) appropriate marketing systems. To enable a designation of appropriate contract farming, financing and marketing systems, some research projects are needed.

## Contract farming

Most of the farmers in Indonesia are smallholders who have a low bargaining position. Small-scale farmers are often constrained in what they can produce by limited marketing opportunities, which often makes diversification into new crops very difficult. Lack of cash capital limits their ability to buy external inputs, so they are not able to adopt improved technology. Small-scale farms are mostly inefficient users of agricultural inputs, so that per unit cost of production is relatively high. On the other hand, low bargaining power in marketing of their product results in a low farm-gate price. Contract farming offers a potential solution to this situation by providing market guarantees to farmers and assuring supply to purchasers.

In an era of market liberalisation, globalisation and expanding agribusiness, there is a danger that small-scale farmers will find difficulty in fully participating in the market economy. In many countries such farmers could become marginalised as larger farms become increasingly necessary for a profitable operation. A consequence of this will be a continuation of the drift of populations to urban areas that is being witnessed almost everywhere. Attempts by governments and development agencies to arrest this drift have tended to emphasise the identification of income generating activities for rural people. Unfortunately, there is relatively little evidence that such attempts have been successful.

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<sup>1</sup> This paper was written as a research proposal to develop a cooperative model of agribusiness systems in Indonesia.

In order to improve the efficiency and bargaining position of farmers, agribusiness should be done commercially on a relatively large scale. Therefore, farmers have to work cooperatively in a group or association. If farmers buy inputs collectively, the per unit price of inputs will be cheaper. Similarly, if farming is carried out collectively over a larger area, the use of inputs will be more efficient, because the per unit cost of production will be lower. In the post-harvest sub-system, collective handling and marketing of agricultural product is thought to be more efficient. By doing agribusiness cooperatively, farmers will be able to increase efficiency and thus farm income.

One form of cooperative farming is contract farming. A contract is defined as a 'legally enforceable agreement expressed or implied'. This agreement is shown by actions, verbally or in writing. In a legal context, an agreement is a 'meeting of the minds', meaning that the contract exists in the mind of each party. Once a contract has been made, it is as binding upon the parties as any other law, and one party cannot withdraw without the agreement of the other parties.

Contract farming can be defined as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at pre-determined prices. The arrangement also invariably involves the purchaser providing a degree of production support, for example, the supply of inputs and the provision of technical advice. The basis of such arrangements is a commitment on the part of the farmer to provide a specific commodity in quantities and at quality standards determined by the purchaser and a commitment on the part of the company to support the farmer's production and to purchase the commodity. This form of contract in Indonesia is very common for dairy cattle, hybrid maize, sugar cane, etc.

Contract farming has been in existence for many years as a means of organising the commercial agricultural production of both large-scale and small-scale farmers. Well-organised contract farming does, however, provide vertical linkages, and would appear to offer an important way in which smaller producers can farm in a commercial manner. Similarly, it also provides investors with the opportunity to guarantee a reliable source of supply, from the perspectives of both quantity and quality. The Nucleus Small Holders (NES) for oil-palm and rubber plantations in Indonesia is just one example.

The intensity of a contractual arrangement varies depending on the depth and complexity of the provisions in each of the following three areas:

- (i) *Market provision.* The grower and buyer agree to the future sale and purchase of a crop or live-stock product.
- (ii) *Resource provision.* In conjunction with marketing arrangements the buyer agrees to supply selected inputs, including land preparation and technical advice.
- (iii) *Management specifications.* The growers agree to follow recommended production methods, usage of inputs and harvesting specifications.

With effective management, contract farming can be a means to develop markets and to bring about the transfer of technical skills in a way that is profitable for both the sponsors and farmers. The approach is widely used, not only for tree and other cash crops, but increasingly, for vegetables, poultry, dairy products and even prawns and fish. Indeed, contract farming is characterised by its enormous diversity, not only with regard to the products contracted but also in relation to the many different ways in which it can be carried out.

The contract farming system should be seen as a 'partnership' between agribusiness and farmers. To be successful it requires a long-term commitment from both parties. Exploitative arrangements by one party are likely to have only a limited duration and can jeopardise agribusiness investments. Similarly, farmers need to consider that honoring contractual arrangements is likely to be in their long-term benefit. Contract farming is becoming an increasingly important aspect of agribusiness, whether the products are purchased by multinationals, smaller companies, government agencies, farmer cooperatives or individual entrepreneurs. The approach would appear to have considerable potential in countries where small-scale agriculture continues to be widespread. In many cases, small-scale farmers can no longer be competitive without access to the services provided by contract farming companies. It must be stressed, however, that the decision to use the contract farming model must be a commercial one. It is not a development model to be tried by aid donors, governments or non-government organisations (NGOs) because other rural development approaches have failed. Projects that are primarily motivated by political and social concerns rather than economic and technical realities will inevitably fail.

Contract farming, however, is not free of weaknesses or problems. For farmers, the potential problems associated with contract farming include increased risk, unsuitable technology and crop incompatibility.

Farmers entering new contract farming ventures should be prepared to balance the prospect of higher returns with the possibility of greater risk. Such risk

is more likely when the agribusiness venture is introducing a new crop to the area. There may be production risks, particularly where prior field tests are inadequate, resulting in lower-than-expected yields for the farmers. Market risks may occur when the company's forecasts of market size or price levels are inaccurate. Considerable problems can occur if farmers perceive that the company is unwilling to share any of the risk, even if it is partly responsible for the losses.

The second problem is the practicality of introduced innovations. The introduction of sophisticated machines (e.g. for transplanting and weeding) may result in a loss of local employment and overcapitalisation of the contracted farmer. Furthermore, in field activities, such as transplanting and weeding, mechanical methods often produce less effective results than do traditional cultivation methods.

The introduction of a new crop to be grown under conditions rigorously controlled by the sponsor can cause disruption to the existing farming system. For example, the managers may identify land traditionally reserved for food crops as the most suitable for the contracted crop. Harvesting of the contracted crop may fall at the same time as the harvesting of food crops, thus causing competition for scarce labor resources.

In Indonesia there are a variety of contract farming models, namely the nucleus estate model (sugar cane, oil-palm, rubber plantations, etc), the multipartite model (dairy cattle, hybrid maize, tobacco, etc), and an informal model (eg food crops, horticulture). These forms of contract farming are increasingly important to small farmers constrained by a lack of access to cash capital and the market economy. The characteristics of contract farming need to be identified, these include the present condition, constraints, and its future prospect for development.

### **Microfinancing**

For more than a decade, the evolution of microfinance institutions has created job opportunities and income for the poor in rural areas of developing countries. Most of the rural people earn their income from the agricultural sector. In order to increase the household income of the poor in rural areas, some development programs have been launched, including microfinance in terms of credit. In some cases, these programs have been directed close to where they are being sustainably implemented. Rural Unit BRI (BRI Unit Desa) in Indonesia, ACCION's BancoSol in Bolivia, and Grameen Bank in Bangladesh are some examples among other microfinance institutions that are known to be successful in pro-

viding services to their members. The fees from their services are sufficient to cover all operational costs.

In Indonesia, some microfinance schemes for small farmers have been introduced, especially for farmers of food crops, from the BIMAS program in 1968–1969 to the agricultural credit scheme for food security in 2001–2002. Cooperatives were intensely involved in the implementation of those credits.

The low performance, especially in terms of credit repayment, changes in agricultural credit policies, the phasing out of subsidies, and the complicated procedure of credit, have meant that such credits have not been widely used and they are becoming less accessible to small farmers. Consequently, the capacity of farmers to adopt improved technology is low because they are not able to buy external inputs needed to apply the technology, resulting in low agricultural productivity and thus household income.

To avoid these problems most farmers try to borrow cash from informal money lenders who have a high interest but which involves a simple procedure. The high interest rate contributes to a high cost of production.

Another aspect which is usually omitted from the design of microfinance schemes is a savings component. This is just as important as the credit aspect. Empirical evidence has shown that farmers have the ability and are willing to save. Assuming that saving and credit services can be implemented simultaneously as an integrated service, then small farmers' capital accumulation can be developed as a source of microfinance and their dependence on external sources of capital can be minimised. Thus, the development of a saving service in line with a credit service is increasingly important.

An intensive assessment of the small farmers' accessibility to credit is needed. It is also important to assess the ability and willingness of small farmers to save. The expected output from this assessment is a policy recommendation on the appropriate credit delivery and saving mechanism model.

### **Marketing**

The existing systems for marketing agricultural products remain inefficient in terms of high marketing margins. This is primarily due to: (1) individual marketing by farmers with very small amounts of produce; (2) farmers are not in a strong bargaining position; (3) exploitation due to high dependence of farmers on traders in capital; (4) inappropriate post-harvest handling (grading, transportation, storage, etc) and processing; and (5) long marketing chains. The following benefits can be expected from involving cooperatives in product marketing: (1) a gain in economies of size; (2) bargaining power may

be improved; (3) an end to exploitation of farmers by traders; (4) an improvement in product quality for higher prices; and (5) a significant improvement in overall marketing efficiency. The end result would be an improvement in the welfare of the farmers, who are the only members of the cooperatives.

### Research objectives

The overall objective of the research is to develop a cooperative model of agribusiness systems in Indonesia. Specifically, the objectives of the research are:

- to identify the characteristics of cooperatives in agribusiness
- to analyse current roles of cooperatives in contract farming
- to analyse current roles of cooperatives in financing agricultural production
- to analyse current roles of cooperatives in marketing of agricultural commodities
- to design an appropriate agribusiness system which covers contract farming, micro-financing for agricultural systems, and marketing.

### Expected outputs

The ultimate output of the research will be a cooperative model of agribusiness systems in Indonesia, specifically:

- data and information on the characteristics of cooperatives in agribusiness
- data and information on the current roles of cooperatives in contract farming
- data and information on the current roles of cooperatives in financing of agricultural producers
- data and information on current roles of cooperatives in marketing
- design of an appropriate agribusiness cooperative model covering contract farming, microfinance, and marketing

### Research topics

#### *Contract farming*

1. Nucleus estate and smallholder system in the eastern part of Indonesia

2. Multipartite partnership system in the eastern part of Indonesia

#### *Microfinance*

1. The credit delivery system for small agricultural producers (nucleus estate and smallholder system and multipartite partnership system)
2. Development of saving services for small agricultural producers (nucleus estate and smallholder system and multipartite partnership system)

#### *Marketing*

1. Analysis of marketing efficiency (nucleus estate and smallholder system and the multipartite partnership system)
2. Problems and prospects for a collective marketing system (nucleus estate and smallholder system and multipartite partnership system)

### Research agenda

*Year 1:* Research in designing an agribusiness cooperative model (contract farming, microfinance, and marketing) in nucleus estate and smallholder system and multipartite partnership system.

*Year 2–4:* Testing of the cooperative model of an agribusiness system in limited areas.

*Year 5:* Evaluation and improvement of the cooperative model of an agribusiness system.

*Year 6:* Mass implementation of the cooperative model of an agribusiness system.

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