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Ministry of Agriculture and Forestry

**The Role and Significance of Cooperatives in
New Zealand Agriculture: A Comparative
Institutional Analysis**

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Abbreviations

AFL	Aotearoa Fisheries Limited
ASX	Australian Stock Exchange
BSE	Bovine spongiform encephalopathy, or “mad cow disease”
CAP	EU common agricultural policy
EU	European Union
FCB	Farmer-controlled business
FMA	Fisheries management area
FOB	Farmer-owned brand
GATT	General Agreement on Tariffs and Trade
GE	Genetic engineering
HEA	Horticulture Export Authority
ICA	International Co-operative Alliance
IFRS	International financial reporting standards
IOF	Investor-owned firm
IPS	Industrial and provident society
ISCR	New Zealand Institute for the Study of Competition and Regulation
ITQ	Individual transferable quota
MAF	New Zealand Ministry of Agriculture and Forestry
NGC	New-generation cooperative
NZAX	New Zealand Alternative Exchange, run by NZX
NZSX	New Zealand Stock Exchange, main listed share board run by NZX
NZCA	New Zealand Co-operatives Association
NZDB	New Zealand Dairy Board
NZX	New Zealand Exchange
PMO	Producer marketing organisation
TIMOS	Timber management organisations
TNC	Trans-national corporation
USDA	United States Department of Agriculture

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1 NZD = 0.91 AUD = 0.57 EUR = 0.39 STG = 0.70 USD = 77 YEN

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1. Introduction and Summary

1.1 Purpose of the Report

Cooperatives and other forms of farmer controlled businesses (FCBs) are major players in a number of New Zealand's agricultural sectors, and together account for a significant share of New Zealand's economic activity. The New Zealand Ministry of Agriculture and Forestry (MAF) has commissioned the New Zealand Institute for the Study of Competition and Regulation (ISCR) to examine the role and significance of cooperatives in New Zealand agriculture. The inquiry is intended to inform consideration by MAF of public policy issues that either currently, or might, confront New Zealand's important agricultural sector.

1.2 Agricultural Sub-Sectors Considered

The main agricultural sub-sectors for this analysis are taken to be dairy, beef and lamb, wool, fishing, horticulture and forestry. Other agricultural sub-sectors considered include rural supplies and fertiliser production/importation. Attention focuses on the major organisations in each sub-sector that are clearly cooperative in character, not least because of difficulties in identifying cooperative organisations in New Zealand.

1.3 Cooperative Definition

A functional definition of cooperatives is developed and adopted in this report. In particular, we define a cooperative as follows:

A cooperative is an organisation in which those who transact with (i.e. "patronise") the organisation also own and formally control the organisation, and derive significant benefits from those transactions over and above any financial returns they derive from their investment in the organisation.

In this context the owners may be suppliers of the organisation, such as dairy farmers supplying milk to a cooperative dairy processing company, or customers of the organisation, such as farmers purchasing fertiliser from a cooperative agri-chemicals company. This definition is sufficiently broad as to encompass agricultural bargaining, processing, marketing, supply and lobbying (i.e. industry representation) cooperatives. It includes both traditional cooperative organisations, and the many variations that have evolved from this model, such as the so-called new generation cooperatives (NGCs) and other hybrid organisational forms, which place greater emphasis on investment returns, and share more similarities with IOFs, than do traditional cooperatives.

The definition distinguishes cooperatives from IOFs, which in principle can be regarded as capital supplier cooperatives, in terms of the degree to which the organisation's owners derive their returns via patronage rather than investment. It also distinguishes cooperatives from FCBs, in which farmers own and control the business, but derive their returns via their investment in the business rather than from their patronage, even where their patronage of the business might be significant. Hence, agricultural cooperatives represent a subset of FCBs.

Legal definitions of cooperatives in New Zealand and elsewhere are also discussed, but it is emphasised that cooperative activity arises in a variety of legal organisational forms. Well-known cooperative principles are also discussed, as they contribute to an understanding of why traditional cooperatives have arisen.

1.4 Analytical Framework

An analytical framework is developed for assessing relevant public policy questions. In particular, a comparative institutional approach is adopted, identifying differences between cooperatives and other types of organisation – notably, the investor-owned firm (IOF). The economics of why certain types of organisation arise as responses to particular economic challenges is briefly traversed, drawing on new institutional economics and one of its major limbs, transaction cost economics.

In short, various types of institutions – ranging from spot markets through organisational hierarchies – are assumed to each offer their own advantages in different contexts, affecting economic performance. Cooperatives are a type of institution, being a distinct organisational form lying somewhere between a spot market and vertically-integrated firm. Left to their own devices, institutions will evolve in response to changing market imperatives, representing a balancing of the relative costs and benefits of that organisational form vis-à-vis others.

Thus cooperatives might be seen as a natural solution to particular market circumstances – such as when numerous, small farmers compete to supply large, concentrated agricultural processors or distributors (e.g. supermarket chains) having some market power. For cooperatives to dominate IOFs in certain sectors requires that they better resolve such problems after also taking into account the relative costs of cooperative and investor ownership. One organisational form may succeed at the expense of another where its structure offers competitive advantages. Of course, certain organisational forms may also come to dominate others due to obstacles to organisational change – whether natural or artificial – and so the desirability of certain organisational forms coming to dominate others must be assessed with this in mind.

1.5 Public Policy Questions

1.5.1 Two Main Heads

The public policy questions we consider fall under two heads:

- 1) Are there natural reasons why farmers opt for cooperative ownership of certain activities, and does any such inclination give rise to desirable or undesirable consequences that deserve to be encouraged or restrained?; and
- 2) Are there artificial reasons for cooperatives being under- or over-represented in New Zealand's agricultural sub-sectors, and does this give rise to desirable or undesirable consequences that can be efficiently addressed by policy?

In each case the relevant policy questions must take into account other features of industry structure, such as the existence of competing cooperatives and/or IOFs (locally and internationally), and more generally the global competitive environment in which New Zealand's agricultural producers operate.

The policy conclusions drawn under each of these two heads may be markedly different, depending on the circumstances. If farmers are naturally inclined to opt for cooperative ownership, and such ownership is desirable, then the policy prescription could be either neutral (do nothing) or encouraging. If such ownership is undesirable, the questions then become whether alternative organisational forms are superior, are there means by which to influence farmers' choice of organisational form, and do the benefits of interventions to influence this choice outweigh the costs?

If there are artificial reasons for the extent of cooperative activity in New Zealand agriculture then different questions arise. Artificial reasons include institutional advantages or disadvantages over IOFs such as preferential taxation (whether or not preference is tied to restrictions on cooperative type or activities), subsidies, or access to markets. Some such reasons may be simpler for policymakers to address than any natural farmer inclination to organise cooperatively, since policy distortions that have been created can also be removed. Once again, however, regard should be had to any similar such distortions as they affect alternative organisational forms, and the costs and benefits of policy interventions need weighing.

1.5.2 Particular Policy Question Dimensions

The particular policy question dimensions to be considered relate to whether the adoption of cooperative organisation in New Zealand agriculture, as opposed to IOFs, affects the economic efficiency of that market, in particular:

- 1) the productive efficiency and financial performance of agricultural organisations;
- 2) the business risk, and risk of failure, of agricultural organisations;
- 3) the nature and extent of local and international competition among agricultural organisations;
- 4) the extent of investment and innovation in agricultural organisations;
- 5) the extent of product differentiation and value-added in agricultural organisations;
- 6) the quality of governance in agricultural organisations;
- 7) access to capital by agricultural organisations; and
- 8) the adaptability of organisational forms to changing circumstances.

1.6 Structure of the Report

The report is structured as follows, with policy implications discussed at the conclusion of each section:

- 1) Section 2 develops our definition of a cooperative, considering also cooperative principles, and legal and functional definitions. Common features of traditional cooperatives are discussed, as are the criticisms commonly directed at traditional cooperatives because of these features. A cooperative typology is presented, illustrating the many dimensions along which cooperatives can differ while remaining cooperative to some degree. One particular alternative to the traditional cooperative – the NGC – is presented, noting where its particular features address some of the criticisms levelled at traditional cooperatives. Finally, the various types of agricultural cooperatives relevant to New Zealand are described.

- 2) Section 3 sets out the analytical framework for assessing how and why cooperatives might come to dominate, or simply coexist with, other organisational forms (in particular, IOFs) in agriculture. In particular, a model is presented showing how certain types of organisation can come to better balance the costs of market contracting and ownership than do others. The common arguments for cooperative formation are presented, as is a model of cooperative evolution. Contemporary factors either encouraging or discouraging the adoption of cooperatives in New Zealand agriculture are also discussed.
- 3) Section 4 surveys the theoretical and empirical literature addressing the particular policy question dimensions set out above. Attention is focused on the literature considering the relative performance of cooperatives vis-à-vis IOFs, but also on the cooperative-specific literature where relevant.
- 4) Section 5 examines the role and significance of New Zealand's agricultural cooperatives in quantitative terms, providing estimates of the market share of cooperatives in a sample of significant agricultural sub-sectors. These market share estimates are compared with those for the same agricultural sub-sectors in selected countries, to provide international perspective on whether cooperatives play a greater or lesser role in New Zealand than they do elsewhere. Comparisons are also made with the extent of cooperative activity in a sample of other, non-agricultural sectors in New Zealand.
- 5) Section 7 discusses areas of further research.
- 6) Section 8 concludes.

1.7 Main Findings

Our main findings from this high-level and broad survey of general cooperative issues, and the role and significance of agricultural cooperatives in New Zealand, are:

- 1) The institutional environment for cooperative formation in New Zealand is fairly neutral relative to that in other jurisdictions. Cooperative legislation is flexible, less tied to cooperative principles than corresponding legislation overseas, and free of policy preferences favouring cooperatives over IOFs and other organisational forms.
- 2) Cooperatives in New Zealand have demonstrated considerable adaptability in response to market and other pressures. Mergers and acquisitions, failures, and conversions to the IOF form have all arisen, indicating what can be termed "adaptive efficiency."

Moreover, many variations within the cooperative model have been adopted, alleviating a number of the criticisms often levelled at more traditional cooperative forms, such as constraints on their ability to raise capital, and therefore to grow and integrate further along the supply chain. The use of joint ventures and strategic alliances between cooperatives and IOFs are examples of some of the strategies also used by cooperatives to compensate for any constraints arising under the cooperative model.

- 3) Neither cooperatives nor IOFs are uniformly superior organisational forms in all industries. Certainly the research available on cooperatives does not find them to be uniformly inferior to IOFs, despite common findings that they confront certain constraints not shared with certain types of IOF (i.e. those with listed shares), such as constraints in raising capital. While cooperative governance is sometimes predicted to be inferior to that of listed IOFs, evidence exists that cooperatives enjoy certain governance advantages relative to IOFs that allow them to adopt alternative methods of resolving governance issues common to all organisations in which there is a separation of ownership and control.
- 4) Cooperatives tend to arise more naturally where multiple, small and competing producers of a product face market power due to industry concentration further downstream in their supply chain, particularly where product perishability exacerbates their exposure to such market power. Additionally, what is required for cooperative development is a strong homogeneity of interest among cooperative owner-patrons, such as that facilitated by product homogeneity (as is the case for milk), and cultural homogeneity and stability (as is often the case in rural communities). Such features also foster the relatively stable ownership of cooperatives, which in turn facilitates long-term financial and relational investments.
- 5) These features often arise in agricultural sectors, particularly those based around family-owned and operated farms, where there are economies of scale in downstream processing, marketing, transportation and/or distribution. However, they do not uniformly arise in agriculture. Certain sectors, such as forestry and fishing, exhibit counter-veiling market power on the part of producers. Others, such as wool and many horticultural sectors, involve considerable product heterogeneity which can create conflicts of interests among suppliers that raise the costs of cooperative ownership.
- 6) Moreover, even where the features facilitating cooperative development are present, this does not preclude the coexistence of cooperatives and other (such as IOF) organisational forms. In fact, some models of cooperative evolution predict that cooperatives will arise as a competitive discipline on IOFs, wresting some of their market share, particularly where those IOFs are otherwise able to exercise market

power over the cooperative's owner-suppliers. Research suggests that this coexistence can be beneficial, although not uniformly so.

- 7) Based on our high-level survey of the role and significance of cooperatives in key New Zealand agricultural sectors, cooperatives are dominant in some sectors where evidence suggests they are also dominant overseas. The dairy sector is a notable example. In some sectors cooperatives are more dominant than in overseas jurisdictions, such as in meat processing and fertiliser production. In the former case this may be a reflection of policy preferences in the 1980s. But it may also simply reflect the additional drivers for cooperative formation faced by New Zealand farmers who are primarily oriented towards exporting to distant markets, and their added reliance on shipping, marketing and distribution services relative to their overseas counterparts.
- 8) In yet other sectors New Zealand has less cooperative involvement than in some other jurisdictions, such as in the apple, fishing and forestry sectors. In the case of apples this may be partly a consequence of repeated deregulation, and possibly represents a transitional arrangement. In fishing this is more likely due to the property rights solution offered by the Quota Management System (QMS) to the "commons" problem that often plagues fisheries. In the forestry sector it possibly reflects the considerable heterogeneity arising among growers and processors, and between different classes of growers, and different classes of processor. In all such cases cooperatives are represented in activities at the margin of each sector, such as in property right protection and enhancement in fishing, quality marking in the apple sector, and forestry research.
- 9) Finally, there is no obvious association evident between performance and cooperative presence in New Zealand's main agricultural sectors. While this question, and many besides, would benefit from further research, we are unable to conclude on this analysis that the extent of cooperative involvement in New Zealand agriculture is either beneficial or harmful. Absent a clearly superior alternative, this suggests that the maintenance of a neutral policy setting is reasonable.

2. Cooperatives Defined

2.1 Cooperative Principles

2.1.1 Cooperative Origins

Birchall (1997, 1998) traces the birth of modern cooperatives to Britain at the end of the eighteenth century. Friendly societies emerged in Britain among working class groups wanting to protect themselves against life's hazards through mutual insurance, numbering over a million by 1834. They were seen as a self-help movement, being a response to the insecurities of reliance on wage labour arising with the industrial revolution. Building societies provided a fund through which members could save towards the cost of building a house. Legislation in 1834 enabled societies to engage in any activities 'not contrary to law', meaning early manufacturing and retailing societies could also register as a special category of industrial and provident society. In 1862 they secured the same limited liability that joint stock companies – which had only become available without special legislation from 1844 – had achieved in 1855. Agricultural cooperatives developed much later. Cooperatives in the British colonies flowed from these developments, but independently evolved elsewhere. For example, housing cooperatives flourished in Norway and Sweden, cooperative banks and mutual insurers in Germany, and agricultural cooperatives in Denmark.

2.1.2 Rochdale Principles

The Rochdale Equitable Pioneers' Society was organised in England in 1844 by 28 weavers working in the cotton mills in the English town of Rochdale. Unable to afford food and household goods due to low wages and poor working conditions, they sought to achieve better buying prices for flour, oatmeal, sugar and butter by pooling their buying power. While not the first cooperative, the Rochdale Society is credited as popularising the modern cooperative model by spreading its cooperative principles, summarised in USDA (1997) as:

- 1) open membership;
- 2) one-member-one-vote;
- 3) cash trading;
- 4) membership education;
- 5) political and religious neutrality;
- 6) no unusual risk assumption;
- 7) limitation on the number of shares owned;
- 8) limited interest on investment;
- 9) goods sold at regular retail prices; and
- 10) net margins distributed according to patronage.

2.1.3 ICA Principles

The International Co-Operative Alliance (ICA) is the world's largest non-government organisation, formed in 1895 to represent cooperatives internationally. In the spirit of the "Rochdale Pioneers", the ICA adopted the following seven cooperative principles in 1995:¹

- 1) voluntary and open membership;
- 2) democratic member control;
- 3) member economic participation;
- 4) autonomy and independence;
- 5) education, training and information;
- 6) co-operation among cooperatives; and
- 7) concern for community.

In the main these principles, like the Rochdale principles, are self-explanatory. The third ICA principle means that members contribute and democratically control the cooperative's capital. They earn limited investment returns, with at least part of the cooperative capital being held in common. Surpluses are to be allocated to (among other things) benefit members in proportion to their transactions with the cooperative. The fourth ICA principle refers to the idea that cooperatives are autonomous self-help organisations.

2.1.4 US Principles

Hardesty and Salgia (2004) identify three basic cooperative principles that have been incorporated in US government regulations, and federal and state tax codes. Analogous to certain of the Rochdale and ICA principles, they are:

- 1) user-ownership;
- 2) user-benefit; and
- 3) user-control.

2.1.5 Principles Contrasted with Investor Ownership

Economic activities organised according to principles such as these tend to differ markedly from investor ownership by virtue of democratic control (instead of voting rights being proportional to investment stake),² and returns being predominantly via distributions proportional to patronage

¹ www.coop.org.

² Although Hansmann (1996, p. 15) notes that one-share-one vote (as opposed to one-member-one-vote) did not become the norm in US IOFs until the twentieth century.

rather than as a return allotted in proportion to invested capital. They also can have a wider range of objectives, for example taking in concerns for community, member education, and fostering of other cooperative organisations.

2.2 Functional Definitions

There are many cooperative definitions and no consensus on any particular definition. The ICA, for example, defines a cooperative as: “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise.”³ This is clearly a very broad definition with functional as well as political elements. It also places little obvious emphasis on the fact that cooperative owners are also patrons of the organisation deriving benefits from membership in proportion to their patronage, although this is made explicit in the third ICA cooperative principle.

A less political and more functional, though still very broad, definition of a cooperative is provided in USDA (1997): “a business owned and democratically controlled by the people who use its services and whose benefits are derived and distributed equitably on the basis of use.” In this definition it is made clearer that cooperative members derive benefit from their membership as a function of the extent to which they patronise the organisation.

In each of the above definitions democratic control is emphasised. Hansmann (1996), however, notes that in many organisations in which owners are also patrons – securing returns in proportion to their patronage instead of as a return on invested capital – one-member-one-vote is often, but not always, the rule. Hence a cooperative definition that seeks to encompass the observed range of such organisations should admit of more general control options than one-member-one-vote.

Accordingly, we propose the following functional definition of a cooperative:

A cooperative is an organisation in which those who transact with (i.e. “patronise”) the organisation also own and formally control the organisation, and derive significant benefits from those transactions over and above any financial returns they derive from their investment in the organisation.

This definition captures the patronage-based returns aspect that appears to distinguish cooperatives from other forms of organisation. We distinguish formal control – or the right to control – from effective control, which can lie with others, to recognise that when organisations are managed by parties other than their owners there can be a separation between formal and

³ www.coop.org.

effective control.⁴ We make no assumption as to the specific form of formal control, which may be one-member-one-vote, one-share-one-vote, voting proportional to patronage, or some other variation. For clarity, while preserving generality, we allow for cooperatives to distribute investment-based returns to their members (we shall see this is a hallmark of NGCs), but emphasise that they must also derive at least a significant part of their total return from the organisation by way of patronage returns. It is this latter feature that particularly distinguishes cooperatives from IOFs, in which returns are distributed in accordance with investment only. While IOF owners might also patronise the firm – e.g. by working for it, selling it inputs, or buying its outputs – these types of return do not provide an impetus for ownership.

It should be noted that this functional cooperative definition makes no assumption as to the cooperative's legal form. It could be equally satisfied using a standard company that is operated cooperatively, or through some specific cooperative legal form. The distinguishing features of a cooperative are patron ownership and returns based more on patronage than from investment. Under this approach many electricity distribution companies in New Zealand can be classified as cooperative, despite their legal forms. Typically such businesses are operated through ordinary company structures, but with those companies owned by trusts. Those trusts, whose trustees are elected by distribution company customers, commonly distribute the returns from their investment in the distribution business to electricity customers either via direct payouts, or via price rebates, based on electricity consumption. The substance of such ownership arrangements is, according to our definition, cooperative, despite their particular legal form.

2.3 Comparative Legal Definitions

2.3.1 New Zealand

Main Legislation and Application

Recognising that cooperative activities can exist regardless of their particular legal form, in New Zealand as in many other countries explicit legislation has been enacted to create distinct legal cooperative structures. This most notably takes the form of the Co-operative Companies Act 1996, which serves as a companion act to New Zealand's general Companies Act 1993, as well as the Industrial and Provident Societies Act 1908. Each piece of legislation is discussed below, followed by a brief summary of tax provisions relevant to cooperatives and mutuals such as IPSs, as well as a comment on the application of international financial reporting standards (IFRS) to cooperatives. We also briefly touch on the application of securities laws to cooperatives in New Zealand, and agriculture-specific legislation having implications for agricultural cooperatives, namely the New Zealand Horticulture Export Authority Act 1987, and Commodity Levies Act 1990.

⁴ See, for example, Fama and Jensen (1983a, 1983b).

For reference purposes, the New Zealand Co-operatives Association (NZCA) as at May 2005 had 49 members, with legal forms as follows:

- 1) Co-operative companies – 35 members, including New Zealand’s largest company, dairy processor and marketer, Fonterra Co-operative Group Limited;
- 2) Industrial and provident societies – 11 members, most of which are involved in trades and retail services;
- 3) Companies registered under the Companies Act 1993 – two, including grocery retailer, Foodstuffs (Auckland) Ltd; and
- 4) one each are registered under the Incorporated Societies Act 1908 (pipfruit growers’ association, Pipfruit New Zealand Inc.) and the Mutual Insurance Act 1955 (rural financial services provider, Farmers’ Mutual Group).

Co-operative Companies Act 1996

The purpose of the Co-operative Companies Act is to allow cooperative owners to conduct business on a mutual basis, where they engage in “co-operative activity”. It defines a “co-operative company” as being:

- “(a) A company, the principal activity of which is, and is stated in its constitution as being, a co-operative activity and in which not less than 60 percent of the voting rights are held by transacting shareholders:”

Section 3 of the act defines “co-operative activity” as being one or more of the following activities, conducted either directly or indirectly:

- “(a) Supplying or providing the shareholders of the company with goods or services, or both:
- (b) Supplying or providing the shareholders of the company’s holding company with goods or services, or both:
- (c) Processing or marketing goods or services, or both, supplied or provided by its shareholders:
- (d) Processing or marketing goods or services, or both, supplied or provided by the shareholders of its holding company:
- (e) Entering into any other commercial transaction with the shareholders of the company:
- (f) Entering into any other commercial transaction with the shareholders of its holding company:
- (g) Supplying or providing goods or services, or both, that are ancillary to, or that otherwise facilitate, the carrying on by the company or its holding company of a co-operative activity referred to in any of paragraphs (a) to (f) of this subsection.”

Section 4 defines a “transacting shareholder” as a shareholder that, having regard to the nature of the co-operative activity carried on by the company, does one or more of the following:

- “(a) Supplies or provides goods or services to the company or, having ceased to provide goods or services to the company, is, in the reasonable opinion of the directors of the company, likely to resume doing so:
- (b) Purchases or acquires goods or services from the company or, having ceased to purchase or acquire goods or services from the company, is, in the reasonable opinion of the directors of the company, likely to resume doing so:
- (c) Enters into other commercial transactions with the company or, having ceased to enter into other commercial transactions with the company, is, in the reasonable opinion of the directors of the company, likely to resume doing so:
- (d) Has incurred an obligation to do an act referred to in any of paragraphs (a), (b), and (c) of this subsection.”

A company registered under the Companies Act can only use the term “co-operative” in its name if it is also registered under the Co-operative Companies Act, but a co-operative company so registered is not obliged to use that term. Such a registration allows the co-operative company to have shares with a nominal value, and to issue (including from reserves), or accept surrender of, shares at that nominal value – features not provided for under the Companies Act. Special provisions are made enabling shareholders to seek to surrender their co-operative company shares – including a right to surrender where they cease to be a transacting shareholder during a specified period, or lose their capacity to be a transacting shareholder. A co-operative company can also seek the surrender of a shareholder’s shares in certain circumstances, and hold shares for future allocation without those shares being cancelled for tax purposes. Only transacting shareholders may vote on co-operative company resolutions, unless the company’s constitution specifies otherwise.

The act also modifies provisions of the Companies Act which would otherwise impede cooperative activity. Importantly a co-operative company may give its transacting shareholders rebates unless its constitution provides otherwise, which reverses the Companies Act provision that requires a board resolution for shareholder discounts to be offered on the company’s goods or services.

Co-operative companies must provide the Companies Office with an annual board resolution confirming that the company has carried on its co-operative activity in the reporting period. It must provide shareholders with an annual report and hold an annual shareholder meeting. It must also have its accounts audited, and file an annual return, along with those audited accounts, with the Companies Office. In other respects a co-operative company is equivalent to a company registered under the Companies Act.

Industrial and Provident Societies Act 1908

The Industrial and Provident Societies Act also enables the formation of an organisation for the mutual benefit of its members, where they carry on an industry, business or trade (other than banking). In contrast to the Co-operative Companies Act, which is silent on cooperative purposes, the primary purpose of an IPS must not be for the profit of its members, although an IPS can still make distributions to its members (generally related to their participation in the society). Also, under a 1939 amendment to the act, and IPS must be either “a bona fide co-operative society”, a society where its activity “will improve the conditions of living or the social well being of members of the working classes”, or be for “community benefit”. Voting rights in IPSs are generally one-member-one-vote, which is a restriction not apparently shared with co-operative companies. An IPS thus has many of the characteristics of a co-operative company, but faces additional requirements and constraints.⁵

Cooperative and IPS Taxation

In terms of taxation, co-operative companies and IPSs enjoy no preferential treatment vis-à-vis ordinary companies. Income from members and non-members is treated as the cooperative’s gross income, with certain rebates treated as deductible expenses to the cooperative and assessable income in the hands of their recipients. Like companies, co-operative companies can attach imputation credits and dividend withholding payments to non-deductible rebates and non-cash rebates, eliminating the double-taxation of cooperative income streams at the member level. IPSs suffer an apparent disadvantage in this regard, but given their not-for-profit constraint this should not prove a disadvantage in practise.

International Financial Reporting Standards (IFRS)

One issue deserves special mention in the New Zealand context, being the country’s move to adopt IFRS by 1 January 2007. New Zealand’s Co-operative Companies Act provides for owner-patrons to redeem their cooperative capital – more formally, to “surrender shares” – at their discretion in some circumstances. Under IFRS this requires such capital to be classified as debt rather than as equity. While the substance of a New Zealand cooperative’s capital structure is not altered by such a treatment – financiers will continue to assess the bankability of cooperatives on the strength of their cash flows and expected share surrenders – it does alter its legal form (affecting, for example, how the solvency test under the Companies Act 1993 is applied, raising liability issues for cooperative directors). It should be pointed out that even the shareholders of an IOF can discretionarily redeem their equity capital simply by liquidating their company, so the economic substance of cooperative and IOF equity is not entirely dissimilar in this regard.

⁵ A comparison of the Co-operative Companies Act and Industrial and Provident Societies Act is provided in *Co-operative Organisations: Establishing a Co-operative Company or Industrial & Provident Society*, available at www.companies.govt.nz.

However, this technical matter under IFRS may have real economic implications for cooperatives, possibly warranting changes to IFRS, or to New Zealand companies and other relevant laws to modify their application in the light of the current IFRS implications.

Securities Law

Since cooperatives issue financial securities, such as shares and debt, they must comply with relevant securities legislation. In recognition that investment in cooperatives is often incidental to the primary motivation for owner-patrons to join a cooperative – to benefit from the services it offers – cooperatives enjoy certain exemptions from securities law requirements.⁶ These are mainly aimed at reducing cooperatives' costs of complying with securities law requirements, for example enabling the issuance of "evergreen" prospectuses. Where cooperatives issue debt or other securities that are listed on New Zealand's dominant, regulated stock exchange, NZX, they must also comply with additional securities law requirements, such as continuous disclosure requirements and restrictions on insider trading.

New Zealand Horticulture Export Authority Act 1987

This legislation creates a form of de facto producer marketing board structure for horticulture exporters. It imposes an export licensing scheme in the event that specified government ministers determine that this would be in the interests of the export marketing of a particular horticultural product, should the producers of that product seek such a determination. If horticultural products become prescribed under the Act, then their exporters must be licensed, and (among other things) the Horticulture Export Authority (HEA) works with industry to develop an export marketing strategy to which all licensed exporters must comply (subject to possible exemptions). The Authority's primary function under the Act is to promote the effective export marketing of horticultural products. Given its coordinating functions, ability to levy producers, and governance mainly by industry, the HEA can be construed as a form of marketing cooperative, albeit potentially imposed rather than voluntary (since consent is not required of all industry members before a horticultural product can be prescribed). As such, it either competes with or displaces cooperative organisations that might otherwise be formed, or enables cooperative-like coordination where cooperative formation would not otherwise be economic. It enjoys at least one statutory preference relative to cooperatives, in that the HEA is exempt from income tax. Accordingly – at the margin – its existence, or the threat of its intervention, may discourage cooperative formation in horticultural products.

⁶ Securities Act (Co-operative Companies) Exemption Notice 2002, www.sec-com.govt.nz. Similar exemptions apply to IPSs under the Securities Act (Industrial & Provident Societies) Exemption Notice 2002.

Commodity Levies Act 1990

Similar to the HEA legislation, this Act provides a means of coordinating industry activities in specified spheres, as might a cooperative (if it could be formed). It is intended to allow the imposition of levies to finance “industry good” activities for which voluntary funding would lead to a “free rider” problem (i.e. which assumes an ownership solution, such as through the formation of an IOF or cooperative, would not suffice). Unlike the HEA legislation a referendum of affected parties is required, in which at least half of those affected must favour the imposition of a levy for the relevant activities. To a lesser degree than the HEA legislation – but potentially across a wider range of sectors (i.e. other than just horticulture) – this legislation can also compete with or displace cooperative organisations, discouraging their formation. Alternatively, it facilitates the development of a cooperative-like solution, at least in the relevant activities, where cooperative formation is infeasible.

2.3.2 Other Jurisdictions

Cooperative laws from a sample of other jurisdictions reveal many similarities, and some differences, with New Zealand cooperative law. We have focused on a selection of countries sharing New Zealand’s English law origin (Australia, Canada, South Africa, UK and the US), that are export competitors (Argentina, Chile), or are countries where cooperatives are a prominent form of organisation (Italy, Denmark, Germany and Spain).

Special Cooperative Legislation, Policy Stance and Taxation

Countries with a federal structure, such as Australia, Canada and the US, tend to combine federal legislation for cooperatives operating across states or provinces with state- or province-level cooperative legislation for those operating within a state or province. In the US the 1922 Capper-Volstead Act facilitated cooperative development, allowing cooperative members to act together without falling foul of anti-trust legislation, provided they do not act anti-competitively.

Some countries have cooperative legislation only for certain cooperative types. Spain, for example, has legislation enabling worker cooperatives, in which the cooperative owners patronise the cooperative by providing their labour services. Its constitution requires public authorities to encourage cooperatives and promote them through local legislation. Curiously, the country in which cooperatives, and agricultural cooperatives in particular, are dominant – Denmark – has no specific cooperative legislation. It relies instead on Denmark’s constitutional freedom of association to enable cooperative formation. The UK enables cooperatives through its Industrial and Provident Societies Act 1965.

In some countries cooperatives face a neutral policy position, being just another type of organisation. The UK and Germany fall into this category, with the US neutral in respect of worker cooperatives. Others adopt a supportive policy stance. Canada, South Africa and the US actively support cooperative development, as do Argentina and Spain for worker cooperatives. In France and Italy, cooperatives have enjoyed privileges in terms of securing government contracts (e.g. in construction).

As in New Zealand, many jurisdictions tax cooperative returns at the member level only, eliminating the double taxation of cooperative income that would arise with cooperative- and member-level taxation of that income. In countries such as Argentina and Italy this is achieved by exempting cooperatives from taxation. In others, like the US, as in New Zealand, cooperative rebates are taxed in the hands of their recipients and are a deductible expense to the cooperative. Unlike in New Zealand (and Australia, the UK and South Africa), where ordinary companies can use dividend imputation to eliminate the double taxation of company income in the hands of shareholders, US companies do not have access to a general imputation scheme meaning that US cooperatives may enjoy a tax benefit relative to US IOFs. Other countries, such as Denmark and Germany (agricultural cooperatives) and Germany (worker cooperatives) apply a lower tax rate to certain cooperatives than that applicable to ordinary corporations, or other forms of cooperative.

Cooperative Definition and Use of the Term “Cooperative”

Cooperatives are defined in various ways depending on the relevant jurisdiction. Many have adopted cooperative principles as a basis for their definition, with countries such as Canada and Chile basing their definition on the Rochdale cooperative principles. Others, such as Australia, South Africa and the UK, draw on the ICA cooperative principles in their cooperative definition.

Cooperative legislation often enables use of the term cooperative, as in New Zealand, but in some countries a cooperative is required to identify itself as such. Countries in the latter category include Canada, Chile, Germany and South Africa.

Control Provisions

Unlike New Zealand cooperative legislation, many jurisdictions impose the requirement of one-member-one-vote, ruling out other voting schemes (e.g. voting rights also being affected by member investment or patronage levels). This is the case in Australia, Canada, South Africa and the UK, and also in Argentina, Germany and Spain (worker cooperatives). Some countries, such as Australia, South Africa and Argentina, further require cooperative shares to have a nominal value, whereas this is simply an option under New Zealand law. Moreover, cooperative shares can only be issued to members (South Africa), voting rights are restricted to members (Canada), and

no shareholder may own more than 20% of issued shares (Australia). Such limitations – not required under New Zealand cooperative law – favour traditional cooperative forms over more recent variants.

Like New Zealand, however, many jurisdictions allow cooperatives to issue equity securities to non-members, and to appoint non-members to their boards of directors. In New Zealand this includes the issuance of voting shares to non-members provided that no less than 60% of voting rights are held by transacting shareholders.

New Zealand Compared

New Zealand's main cooperative-specific legislation, the Co-operative Companies Act, is similar to that in other jurisdictions, albeit with less reference to cooperative principles than in many other countries. Cooperatives – like IPSs – are permitted and facilitated, but face no particular preferences relative to other organisational forms, either in policy or taxation terms.⁷ Indeed, New Zealand cooperatives do not enjoy access to subsidies and other assistance that their counterparts enjoy in countries such as Canada and the US, but face comparable treatment to those in the UK. New Zealand's legislation is more flexible than that in some jurisdictions, favouring no particular form of cooperative over another, and enabling innovations in cooperative design while preserving cooperative status.

2.4 Features and Criticisms of Traditional Cooperatives

2.4.1 Features

Traditional Cooperatives versus IOFs

Chaddad and Cook (2002) present an ownership rights typology of cooperatives, with the traditional cooperative at one extreme, the IOF at the other, and five intermediate cooperative types in between. One of these variants, the NGC, is discussed in Section 2.5, and the remaining types are discussed in Section 2.6. Chaddad and Cook identify three defining features of what they term a traditional cooperative:

- 1) Ownership rights are restricted to member-patrons;
- 2) Rights to residual returns are non-transferable, non-appreciable and redeemable; and
- 3) Benefits are distributed to members in proportion to patronage.

⁷ Official government policy regarding cooperatives in New Zealand appears to be little more than a statement of commitment to the cooperative model, and of no intention of changing cooperative legislation unless the NZCA sought such change. See "Committed to the Cooperative Model", speech by Commerce Minister Lianne Dalziel, 5 December 2003.

By contrast, the polar opposite of the traditional cooperative, the IOF, is characterised by:

- 1) Unrestricted, transferable, non-redeemable residual claims;
- 2) Shareholders not being required to patronise the firm in ways other than via investment;
and
- 3) Residual claims being freely alienable in secondary capital markets, and being rights in net cash flows for the life of the firm.

With these contrasts in mind, we can examine the defining features of a traditional cooperative in greater detail.

Residual Rights of Control

In a traditional cooperative ownership is restricted to those who patronise the organisation – either by supplying it with inputs, such as milk from dairy farms, or labour services in worker cooperatives, or by buying its outputs, such as fertiliser from an agri-chemicals cooperative. Following the property rights approach of Grossman and Hart (1986), ownership is taken to mean residual rights of control, or the ability to determine how the organisation is to operate when its various contracts do not completely specify what it must do in each state of the world (i.e. where contracts are incomplete).

This suggested feature of traditional cooperatives in practice means that the right to vote for the cooperative's directors, even to be a director, and to vote on major cooperative resolutions at shareholder meetings, can only be held by owners who patronise the cooperative. Moreover, traditionally such voting rights have accrued to cooperative owners on a one-member-one-vote basis. These features are to be contrasted with IOFs, in which multiple classes of shareholder are possible, each with voting rights to some degree, and where voting rights are typically assigned on a one-share-one-vote basis.

An important implication of this feature is that traditional cooperatives traditionally have constrained access to equity capital, being able to raise it only from owner-patrons. Capital is raised directly from owner-patrons, via accumulated retained cooperative earnings, or by making capital charge deductions from patronage returns. IOFs, by contrast, can access equity capital simply by issuing new shares to investors.

Residual Return Rights

Residual return rights refer to the rights of owners to receive any surplus generated by the cooperative once its committed or contracted payments have been met. In the case of traditional cooperatives, this right is expressed in terms of the right to receive some share of the cooperative's surplus, where that share is determined on the extent to which the relevant owner has patronised the cooperative. For example, if a cooperative has generated an excess of revenues over expenses, it may retain some proportion of that surplus for investment or other future requirements, and pay any balance to its owner-patrons as a patronage-based return. In a dairy cooperative, for instance, an owner-patron might receive an end-of-season payout based on its relative share of milk-fats supplied to the cooperative that season.

In a traditional cooperative the right to receive such a payout is tied to an owner-patron owning a share or shares in the cooperative. Conventionally these shares have had nominal values, being simply a form of "entry right". Unlike shares in an IOF, members can seek to redeem their interest in the cooperative, requiring the cooperative to repay some amount reflecting the member's contribution to the cooperative. The redeeming member may or may not participate in any accumulated surpluses that the cooperative has generated, depending on the cooperative's constitution or rules. It is unusual, in traditional cooperatives, for the amount paid on such redemption to reflect the current market value of cooperative membership, or the present value of expected future cooperative net cash flows. In this sense the value of these residual return rights are not "appreciable". Where the cooperative accumulates reserves that are not allocated to particular owner-patrons, instead of this accumulating value being reflected in the value of owner-member cooperative shares, they form a pool of equity that is essentially a "commons", or "common property" – being cooperative value not attributed to its owners (except, perhaps, on liquidation or demutualization, when there is typically debate about ownership).

In an IOF, by contrast, shareholders typically have no right to demand that the company redeems their shares. But IOF shareholders can typically sell their shares, and if they do so they would usually expect the consideration received to reflect the present value of the company's future expected net cash flows. Moreover, in an IOF an ownership claim is a proportional claim to the firm's future expected net cash flows over the life of the firm. In a traditional cooperative the right to the cooperative's residual cash flows is tied to ongoing patronage, typically by an individual. Thus traditional cooperative residual return rights cannot be transferred to third parties, and they have a finite horizon tied to the owner-patron's patronage instead of the life of the cooperative.

Patronage-Based Returns

The final feature of traditional cooperatives reflects common cooperative principles. Since those joining a traditional cooperative often pay only a nominal sum for the share or shares they must

acquire in order to become a cooperative member – as opposed to the true market value of a proportional ownership stake in the cooperative – they commonly derive little by way of return on their investment. This feature is exacerbated by the fact that membership is open in traditional cooperatives, meaning new owner-patrons can join the cooperative and access the benefits it offers without paying the full value of their entry. Conversely, in an IOF a joining shareholder would typically pay the market value of any shares they buy, and since they receive little by way of returns from their company based on their patronage of the company (which may be nil), they would usually expect to receive a market rate of return on their entire investment sum.

Thus in a traditional cooperative the economic returns to ownership are derived by sharing in the cooperative's surplus (if any), which conventionally is tied to the owner's level of patronage of the cooperative. In a cooperative that the owner supplies, the owner expects to receive a price on its supplies – including any patronage-based share of the cooperative's surplus – in excess of what they would receive by selling their supplies to others. Where the owner makes purchases from the cooperative, it would expect to pay a price for those items – net of their share in the cooperative's surplus – that is less than that they would expect to pay to third parties.

2.4.2 Criticisms

Cook (1995) and Cook et al. (2004b) summarise five key criticisms made of traditional cooperatives. These criticisms arise because the residual rights of control and residual return rights are poorly aligned in such cooperatives. Notably many of these criticisms tend to arise to a lesser extent (if at all) in respect of IOFs, where voting rights on shares and the right to participate in a firm's residual cash flows are commonly (but not always) proportional to the number of the company's shares that a shareholder holds, and hence aligned. Each of the five key criticisms is discussed below. In many respects these are simply applications of established economic and financial theory to features that happen to coincide in traditional cooperatives.

Free Rider Problem

An *external* free rider problem arises in traditional cooperatives, where the nature of their ownership claims means that the benefits and costs faced by cooperative members and non-members are poorly aligned. For example, where a cooperative is successful in shifting the market price and terms for the inputs that its owners supply towards competitive levels (i.e. in an industry otherwise lacking competition), other non-member suppliers may get to enjoy the same price and terms without paying for membership. The same, of course, can be said where an IOF with market power sets prices and its competitors follow its pricing lead.

Conversely, an *internal* free rider problem arises where new members of the cooperative enjoy the same patronage returns as existing members, or can access the cooperative's capital without paying the full cost of the benefits they derive (i.e. where the cooperative's capital involves an element of "common property," and/or cooperative shares are not priced at market value). If new members can join the cooperative without paying the full costs of their membership – because the price they pay for their cooperative shares does not reflect, for example, extra capital investments the cooperative may need to make to process the extra patronage they bring it – then other cooperative members effectively subsidise their entry. This dilution of existing member returns creates an intergenerational conflict between new and old members, and a disincentive for older members to invest in the cooperative. It also exposes the cooperative to takeover by third parties prepared to realise some of this common property equity, particularly if cooperative members can be tempted to trade patronage benefits for the realisation of accumulated equity that was potentially created before they even joined the cooperative.

Horizon Problem

This problem arises when the owner-patron's claim on the cooperative's residual earnings is short-lived compared to the productive life of the cooperative. It results because the owner-patron's ownership claims cannot be traded at market value, being tied to its patronage of the cooperative. Hence the value of any long-lived investments the cooperative makes is not fully reflected in the owner-patrons' ownership claims, particularly where the investments involve intangibles assets, creating a disincentive to invest (e.g. in R&D, brand development, etc). In an IOF, by contrast, the value of long-lived investments is in principle fully reflected in the firm's share price, and so an investor does not forfeit that value simply by choosing to sell out of the firm.

Portfolio Problem

The inability of owner-patrons of traditional cooperatives to separate their ownership and patronage decisions gives rise to a "tied-equity" problem. While their risk preferences might dictate that they diversify their investment portfolio risk by selling some or all of their ownership claims in the cooperative, they are unable to achieve this due to the requirement to bundle ownership and patronage. They benefit from any extra returns created from their patronage, but otherwise are confronted by a sub-optimal investment portfolio allocation, bearing more risk or generating less return than they would otherwise prefer. This in turn means cooperatives face pressure from their owner-patrons to adopt investment policies that mitigate this owner-level lack of diversification, even when this is not optimal for the cooperative activity itself.

Control Problem

Traditional cooperatives lack some of the means available to IOFs for mitigating the problems arising when there is separation between an organisation's owners and those who manage the organisation on their behalf (i.e. managers) – the classic principal agent problem.⁸ Because of this separation it is predicted that the interests of owners and managers will diverge, giving rise to agency costs from mechanisms to minimise these divergences (e.g. costs of monitoring mechanisms), and from the inability of owners to perfectly align their managers' interests with their own (e.g. through incentive-based remuneration tied to hard-to-measure value creation). Particularly due to the lack of transferable ownership claims with an observable current market value, cooperative owners lack important mechanisms for monitoring manager performance enjoyed by some (i.e. listed) IOFs, and means to enable managers to share in cooperative returns so as to align their respective interests. Additionally, where cooperative voting is restricted to one-member-one-vote this hampers the formation of owner blocs with concentrated interests, which blocs are often found to provide useful governance disciplines on management. Such control problems are predicted to worsen with cooperative size and complexity.

Influence Costs Problem

The wider a cooperative's range of activities, or the greater the heterogeneity among its members, the greater the scope for the interests of its owner-patrons to diverge. This in turn gives rise to incentives for interest groups to form and seek to influence the cooperative's operation to their benefit and at other owners' expense. Banerjee et al. (2001) present evidence on the costs of such behaviour in Indian sugar processing cooperatives, where larger owners face an incentive to reduce the price paid on inputs, to the detriment of smaller suppliers, instead securing benefits from the cooperative in other ways (e.g. influencing cooperative contributions to community projects so as to increase their personal prestige).

2.5 The New Generation Cooperative (NGC)

Many of the criticisms levelled at traditional cooperatives are resolved with variations to the nature of cooperative ownership claims, and certain other variations. This can be achieved while preserving other important cooperative features, such as patronage-based returns. For example, in the 1990s a new form of cooperative – the so-called new-wave, or new generation cooperative (NGC) – quickly gained popularity in the US agricultural sector. Its popularity has spread, with the model being adopted elsewhere, including in New Zealand.⁹ This section examines NGCs and

⁸ See, e.g. Jensen and Meckling (1976), Fama and Jensen (1983a, 1983b).

⁹ For example, Tatua Co-operative Dairy Company – see Ohlsson (2003).

explains how their particular features help to resolve the problems commonly attributed to traditional cooperatives.

Nilsson (1997a) characterises the most prominent features of NGCs, distinguishing them from traditional cooperatives, as:

- 1) Delivery contracts setting out members' rights and obligations to deliver products of a specified quality and quantity; and
- 2) Closed or restricted membership, or even selected membership.

Other NGC distinctives are argued to flow from these, representing an integrated whole:

- 1) *Production-related distinctives* – NGCs are market driven and focussed on “value-added” processing. To reduce costs or improve quality they often place extra requirements on producers, such as demanding certain grower practices. They require sufficient scale to be significant players in their market, and use efficient production techniques. Members must pay for any shortfalls on contacted delivery amounts or quality.
- 2) *Ownership-related distinctives* – producers must make sizeable capital investments to fund value-added processing facilities, with shares being linked to units of production. Member equity usually makes up 40 – 50% of capital, with the balance financed from banks. Membership is closed, with shares tradable among members at share values that vary along with the cooperative's prospects.¹⁰ Such tradability makes the NGCs equity permanent, which means banks offer financing on more favourable terms. New shares are sold if equity is required for expansion, or in proportion to delivery volumes where equity is required for other purposes. *Profits are distributed as patronage refunds, but since patronage and investment are proportional, this amounts to proportional dividends on invested capital.* Non-voting securities can be sold to non-members also.
- 3) *Management/Control-related distinctives* – NGCs apply one-member-one-vote, despite investments being proportional to patronage. Heterogeneity among members is reduced by NGCs operating in narrow business fields (versus other agricultural cooperatives often diversifying). Directors are chosen from among members. Senior management are professional and high quality, and advice is taken, with thorough feasibility studies before NGC establishment.

¹⁰ Typically such share trading is not as free or transparent as listed IOF shares, with board approvals sometimes required for transfers, and share prices set at assessed rather than open-market values.

According to Nilsson (p. 4): “The NGC model is constructed in such a way that the agency theoretical problems are not higher than in comparable [IOFs] but rather lower.” This suggestion is consistent with the observations in Hansmann (1996), who argues that even traditional cooperatives enjoy such an advantage over IOFs.

Nilsson further argues that NGCs resolve common traditional cooperative problems as follows:

- 1) *Horizon problems* – removed by tradable shares: members thus focus on maximising the present value of long-term NGC net cash flows;
- 2) *Free-riding and common property problems* – are reduced since value of unallocated capital is reflected in tradable share prices, and investment/patronage signals are not distorted by artificially setting equity values as in traditional cooperatives;
- 3) *Portfolio problems* – are minimal because NGCs’ narrow business focus reduces conflicts over investment policy, members are fairly homogeneous and projects are thoroughly scrutinised before NGC establishment.

Finally, Nilsson argues that NGC membership tends to consist of the best farmers, (p. 5): “Less efficient members will find that the sale value of their shares exceeds the profits they can make by remaining on as suppliers, while more efficient farmers will find it profitable to pay a higher price for the same shares.”

2.6 A Cooperative Typology

Chaddad and Cook (2002) provide an ownership rights typology of cooperatives to illustrate where five non-traditional forms of cooperative, such as the NGC, fit within the spectrum bounded at one end by traditional cooperatives, and at the other by IOFs.

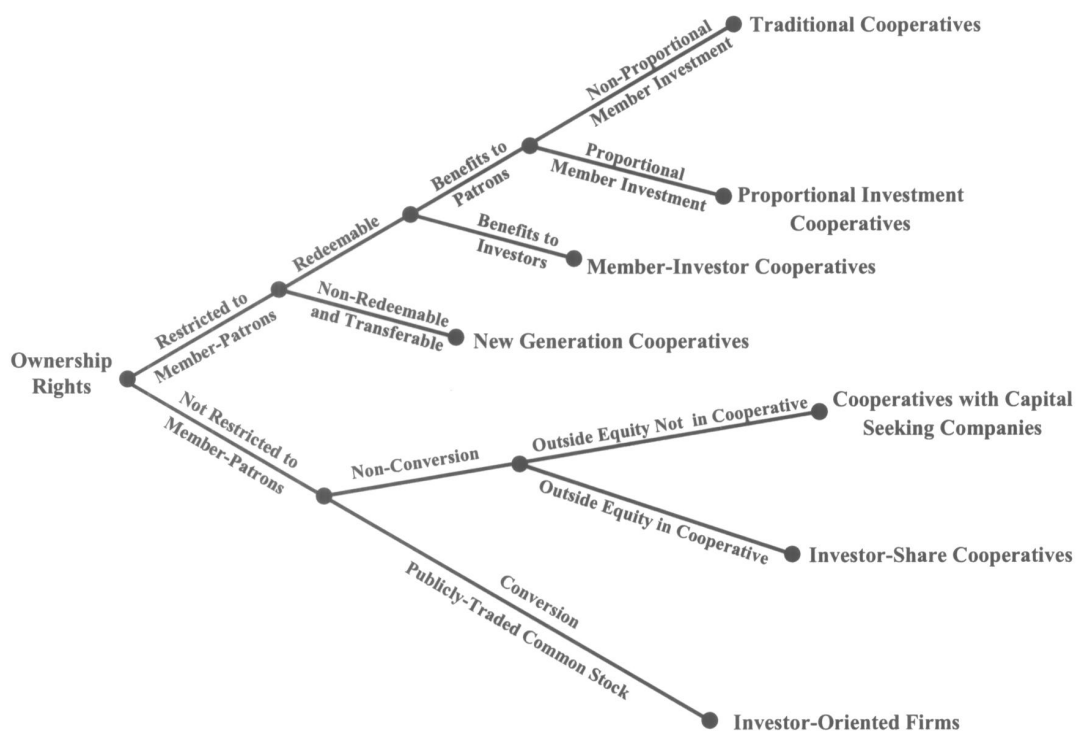
Figure 2.1 portrays the suggested spectrum of cooperative types. The upper branch of the figure characterises three non-traditional cooperative models in which ownership rights – as in traditional cooperatives – are restricted to owner-patrons. In the lower branch there are two more non-traditional cooperative types, this time allowing non-owner patron ownership and outside equity at either the cooperative or some subsidiary level.

The five non-traditional cooperative types can be characterised as follows:

- 1) *Proportional Investment Cooperatives* – differ from traditional cooperatives in that owner-patrons are required to invest in proportion to their patronage;

- 2) *Member-Investor Cooperatives* – owner-patrons receive returns in proportion to both patronage and investment, with either dividend payments in proportion to shareholdings, or by allowing appreciable share values;
- 3) *New Generation Cooperatives* – ownership rights remain restricted to owner-patrons, and in fact to specific owner-patrons, but are both appreciable and transferable. In addition, owner-patrons are required to patronise the cooperative in proportion to their investment;
- 4) *Cooperatives with Capital Seeking Companies* – allow non-patron equity participation, enabling access to outside capital, but restrict this participation to be via subsidiary companies, strategic alliances, etc, rather than directly in the cooperative; and
- 5) *Investor-Share Cooperatives* – allow direct non-patron equity participation in the cooperative itself, usually involving the issuance of multiple classes of financial instrument (such as non-voting, or “investor” shares).

Figure 2.1 – Cooperative Ownership Rights Typology



Source: Chaddad and Cook (2002).

The first three of the five models, like traditional cooperatives, preserve patron control of the cooperative at the expense of restricting the cooperative’s access to external capital (other than

non-voting capital, although equity constraints can limit cooperatives' bankability). The latter two reverse these tradeoffs, enabling access to external capital – importantly equity capital (which then enhances the cooperative's debt capacity) – but at the expense of ultimately diluting patron control to some degree. Chaddad and Cook suggest that the latter two non-traditional cooperatives carry an inherent tension – in that different owner classes will have conflicting objectives regarding profit maximisation and patronage return maximisation. Conversion to an IOF represents an “exit” away from the cooperative model.

2.7 Cooperatives in New Zealand Agriculture

With the functional and legal definitions of cooperatives in mind, as well as the range of cooperative arrangements that might be adopted, it is useful for later sections to set out a snapshot of the types of cooperative activities relevant in New Zealand agriculture.

Worker cooperatives are not a significant feature in New Zealand, as they are in countries such as Spain and Argentina. Nor are bargaining cooperatives, which have a significant presence in the United States, and through horizontal integration seek to secure better prices and terms for agricultural producers in their dealings with parties downstream in the agri-food supply chain. In each case this is possibly a reflection of peculiarities of each of these countries, such as the anti-trust exemptions afforded to bargaining cooperatives under the Capper Volstead Act in the US.

Other cooperative types common overseas are also relevant to New Zealand agriculture. These combine some or all of the following activities:

- 1) *Handling* – such as warehousing storable farm outputs like grain or wool, or perishables such as pipfruit in coolstores;
- 2) *Processing* – purchasing farm outputs for processing into either commodity or more refined consumer products, particularly where processing requires large capital facilities and/or farm outputs are highly perishable, both of which can expose farmers to any market power held by third party processors;
- 3) *Marketing* – particularly where farm outputs are storable and/or not significantly processed for ultimate sale, possibly offering pooling and staged selling to reduce risk when market price are volatile, avoid market flooding, negotiate better selling prices and/or to secure economies of scale in marketing and brand/market development;
- 4) *Farm supplies* – particularly, but not exclusively, for specialised farm goods or services which might not otherwise be available, where the quality of critical inputs (such as

stock genetics) or specific farm attributes (such as farm lending risk or insurability) are important but hard to discern, and/or where suppliers have market dominance (such as in fertiliser supply);

- 5) *Property right development, enhancement and protection* – compensating for lack of enforceable, or insecure, property rights through cooperation to avoid over-exploitation or exploitation by third parties, for example in fisheries, and irrigation schemes;
- 6) *Advocacy and representation* – improving the interface between farmers and regulators, policy-makers and government on matters of common interest to industry members, such as in negotiating export market access (which often requires inter-governmental engagement);
- 7) *Social services delivery* – where local knowledge and/or personal relationships are important in delivering and identifying the need for social services, such as in primary healthcare; and
- 8) *Industry good activities* – such as research and development, where industry members have a common interest in the outcome but individually lack the resources or incentive to undertake such activities separately.

Specific examples of cooperatives operating across these types of activities in the New Zealand agricultural sector are provided in Section 5.

2.8 Policy Implications

- 1) New Zealand provides a relatively less-favourable legislative and policy environment for cooperatives than do many overseas counterparts (i.e. countries with English law origins, other major export competitors, and other countries where cooperatives are significant).¹¹ However the New Zealand environment is relatively neutral regarding alternative organisational forms.
- 2) New Zealand's main cooperative legislation, the Co-operative Companies Act 1996, is relatively flexible and not tied to specific cooperative principles, providing New Zealand cooperatives with ample scope to modify their particular form and objectives as needs or desires dictate.

¹¹ Indeed, the NZCA advises that the New Zealand government has opted not to introduce measures to implement the International Labour Organization's *Promotion of Cooperatives Recommendation, 2002* (www.ilo.org).

- 3) The New Zealand government has stated it is receptive to considering changes to cooperative legislation if the NZCA should recommend change, adding to the flexibility provided by current legislation. Such receptiveness may well be useful if IFRS rules are not modified to better reflect the economic substance of cooperative equity and continue to treat redeemable equity as debt, in which case amendments to legislation such as the Companies Act may be warranted (e.g. clarifying the application of the solvency test for cooperative companies).
- 4) If government sought to regulate cooperatives as a class it would face some difficulty, firstly because New Zealand has no requirements for cooperatives to identify themselves as such, and secondly because cooperatives arise functionally across a variety of legal forms.
- 5) The types of cooperative assistance offered in comparable jurisdictions create a preference for the cooperative form.
- 6) The cooperative model is subject to various criticisms (as is the IOF model, it should be noted), hence the continuing presence and even growing use of cooperatives suggests that:
 - a) There are barriers to cooperative members adopting superior ownership forms – discussed further in Section 3;
 - b) Cooperatives offer counter-veiling benefits that mean they remain a superior alternative to other types of organisation – discussed further in Section 3; or
 - c) These criticisms are poorly founded – empirical evidence is discussed in Section 4.

3. Factors Affecting Cooperative Evolution

3.1 An Institutional Framework

In order to determine whether the incidence of cooperatives in New Zealand agriculture gives rise to policy issues for MAF, it is first useful to consider how and why certain forms of economic institution evolve, and the extent to which the nature of economic institutions is economically significant. We propose to examine these two questions drawing on the economic tools provided by institutional economics, which in turn draws on disciplines such as transaction cost economics and agency theory. We begin with a brief summary of the relevant issues and ideas, and then provide a framework that explains why cooperatives arise in certain spheres of economic activity either in association with, or instead of, alternative forms of coordinating institution.

3.1.1 Institutions and Institutional Change

Cooperative as Governing Institution

Institutional economics has developed considerably over the past three decades (Williamson (2000), Joskow (2004)), attempting to understand and explain the importance of institutions to economic performance. Here institutions are defined, following North (1990), as the formal and informal rules that constrain individual behaviour and shape human interaction. Organisations can be defined as sets of actors who cooperate or act jointly in production (Eggertsson (1996)). Cast in this light, agricultural cooperatives are a form of institution, being organisations that shape how farmers interact with other farmers, those who process and market their farm outputs, their ultimate customers, competing organisations involved in any or all of these areas, and regulators, government and the broader society.

North (2003) observes that economic institutions derive from political ones, touching on questions of governance: “who makes the rules and for whom.” Other governance mechanisms include spot markets, contracting, private and public corporations, and bureaucratic hierarchies. Each such mechanism involves increasing levels of coordination. How economic activity is organised around such governance mechanisms is important in considering how institutions such as agricultural cooperatives evolve, and their merit relative to alternative forms of institution (such as IOFs).

Efficiency of Persistent Institutions

How institutions do or do not evolve has important implications for whether their evolution and persistence can be interpreted as economically beneficial or harmful. Fama and Jensen (1983a, 1983b) and Hansmann (1996) argue that, left to natural forces, the productive organisational forms

that survive are those that best meet their consumers' preferences while minimising the combined costs of production and organisation (e.g. ownership/governance costs). However, such organisational evolution and survivorship might also reflect institutional biases, or vulnerability of the political process to capture by interest groups. Hence, to infer the superiority of an organisational form by virtue of its persistence requires the elimination of such alternative explanations.

In relation to agricultural cooperatives, for example, it is pertinent to inquire as to whether any dominance they enjoy over other organisational forms, such as IOFs, in activities such as dairy processing is a reflection of electoral strength (which requires consideration of why cooperatives might dominate in other, non-agriculture, activities). Alternatively it may be pertinent to investigate whether ownership restrictions (e.g. non-tradable and poorly specified property rights) in traditional cooperatives have impeded organisational transformation through ownership change. Evidence on the pace at which cooperatives have merged with others or with IOFs, or have adapted their organisational form, should also be considered. Similarly, where certain organisations involve significant power being held by non-owner managers this can result in impediments to change, although the demutualisation of finance and insurance companies might also reflect such control. Alternatively, under-developed institutions for converting one form of organisation to another might present prohibitive transaction costs, entrenching sub-optimal organisational forms. Questions such as these are discussed further in Section 4.6.

Institutional Change and Public Policy

Richter (2005, p. 18) observes that "Institutional change comes about through 'entrepreneurs in political and economic organizations' who realize that they could do better by changing the institutional framework." Such entrepreneurs, in bringing about new forms of institution, may be behaving opportunistically, but they may also be contributing to dynamic economic efficiency. Competition in product, factor and capital markets is thus an important discipline to ensure that such institutional change brings welfare gains, recognising that there is no universally ideal organisational form.

From a policy perspective it is important to retain what North (2003) terms "adaptive efficiency", allowing for the maximum of institutional choices and room to experiment, while providing institutions (such as bankruptcy laws) that enable failed solutions to be eliminated.

Recognising that hypothetical ideals are rarely achievable, Williamson (2000, p. 601) therefore proposes a "remediableness criterion" for public policy analysts to apply when considering the desirability of an organisational form:

“an extant mode or organization for which no superior *feasible* alternative can be described and *implemented* with expected net gains is *presumed* to be efficient. . . . [public policy] analysts can no longer condemn extant modes because they deviate from a hypothetical ideal” [original emphasis]

This criterion “presses the public policy analyst to display a superior feasible alternative”, allowing also for any costs of implementation in the net benefit calculation.

3.1.2 The Economics of Vertical Integration

Considerable progress has been made in the economics of whether a firm should integrate backwards (by owning its suppliers) or forwards (by owning organisations operating further down its supply chain) – the question of vertical integration. The question is especially pertinent where parties in a supply chain must make relationship-specific investments, giving rise to “asset specificity”. For example, if an agricultural processing and marketing cooperative acts as a mechanism for coordinating between consumers and farmers, for example to procure farm outputs that better meet consumers’ product preferences, this may require investments by both the cooperative and its suppliers that have value only in their particular use.

It can be desirable for this coordination to take place through a farmer-owned cooperative if, for example, the alternative is for farmers to contract with third-party processors and marketers to provide the desired products requiring the relationship-specific investments. If such contracts can only be imperfectly specified (i.e. are “incomplete”), or are costly or impossible to verify or enforce, then the contracting parties anticipate that contingencies may arise where their counterparties attempt to exploit their relationship-specific investments. Such “hold-up” problems – being anticipated – lead to suboptimal investments by the parties. Forming a cooperative – a form of vertical integration – can be seen as a coordination solution to the hold-up problem, inducing a more efficient level of relationship-specific investment.¹²

Agricultural cooperatives thus represent a form of governance solution. They lie between spot market transacting (where farmers simply sell their outputs in an unprocessed state on spot markets) and complete vertical integration (where farmers collectively own all stages in the supply chain). Strategic alliances are another form of solution. In each case the costs of non-integration (e.g. hold-up) are balanced against the differing governance costs that arise under alternative governance arrangements in determining the optimal configuration of coordination and ownership.

¹² Boyd et al. (2000) discuss instances where contractual coordination in New Zealand agriculture for various products occurs outside the vertically integrated cooperative model.

3.1.3 The Economics of Ownership

Economics has had much to say in the past few decades on the costs arising where the owners of an organisation are not its managers (Jensen and Meckling (1976), Fama and Jensen (1983a, 1983b)). This separation of ownership and control gives rise to “agency costs” due to the inevitable conflicts of interest that arise between owners and managers, and the costly mechanisms that owners must employ to monitor managerial performance and to induce managers to act in their interest. Such ownership costs must be weighed against the costs of transacting alternatively through markets (whether via spot markets, or contracts).

Hansmann (1996) formalises these tradeoffs as part of a comprehensive review of the various types of organisation that predominate in different spheres of activity (including cooperatives in certain parts of agriculture). Based on the Jensen and Meckling (1976) model of a firm as a “nexus of contracts,” he develops a model of ownership seeking to explain:

- 1) Why ownership generally falls to a firm’s patrons?; and
- 2) What factors determine the particular group of patrons to whom ownership is given for a particular firm?

The Hansmann model of ownership begins by recognising that market contracting can be costly (e.g. the hold-up problem, as above). This is especially so where there are market failures, e.g. where effective competition is lacking or one of the parties to the contract is at an informational disadvantage. These costs can be reduced by one party owning the other, diminishing the incentives for the dominant party to exploit the weaker.

He then asks, what is the optimal ownership assignment – minimising the total costs of transactions between the firm and all its patrons? All other things being equal, these costs will be minimised if ownership is assigned to the class of patrons for whom the costs of market contracting are the most severe. But ownership involves costs too, including “governance costs” – such as the costs of making collective decisions, the costs of monitoring managers, and the costs of poor decisions and excessive managerial discretion. Another ownership cost is the cost of risk bearing. These costs can vary greatly between patron classes.

Thus, the least cost assignment of ownership is that minimising the sum of all of the costs of a firm’s transactions, i.e. the sum of:

- 1) the costs of market contracting for patrons that are not owners; and
- 2) the costs of ownership for the firm’s owners;

noting that the former will depend on which of the other patron classes owns the firm.

With the dynamic view of how institutions evolve discussed above, and an awareness of the conditions under which such evolution can be regarded as optimal (first-best or otherwise), the potential efficacy of cooperatives as a form of vertical integration to alleviate problems of hold-up, and Hansmann's (1996) framework for evaluating alternative ownership assignments, we can now more critically turn to both the common and economic arguments offered in favour of cooperatives in agriculture.

3.2 Arguments for Cooperative Formation

As Reynolds (1997, p. 1) puts it: "Agricultural producers have an incentive to form and support a cooperative when it provides benefits they would not obtain by acting independently. Cooperatives can prosper when producer interests and goals are accomplished more effectively with cooperation than with more individualistic methods of transacting for services." In this section we amplify on these ideas by first setting out the range of cooperative strategies commonly identified as bringing about such benefits from cooperation, including some evidence on which of these strategies cooperatives actively pursue. We then more fully explore when agricultural cooperatives are suggested over IOFs according to the economics of ownership, largely following the framework and evidence presented in Hansmann (1996).

3.2.1 Survey of Theoretical Cooperative Strategies

Peterson and Anderson (1996) survey and categorise the common theoretical strategies attributed to cooperatives, and compare them with strategies identified by interviews with 21 US agricultural cooperatives. They contrast the objective functions usually assumed for cooperatives and investor-owned firms: the former seeking to maximise joint returns to both the cooperative and its owner-patrons; the latter assumed to maximise firm returns only.

Theoretical cooperative strategies are divided under two headings:

- 1) *Return strategies* – to increase future returns; and
- 2) *Risk-management strategies* – to make future returns more certain.

Included under *returns strategies* are:

- 1) Countering market power:
 - a) *Competitive yardstick* – introducing competitive discipline on prices in an industry otherwise suffering from market power, by displacing non-cooperative market share through *vertical* integration;
 - b) *Counter-veiling power* – securing bargaining strength to move market equilibrium towards the competitive ideal through *horizontal* integration;

- 2) Improving cost efficiencies:
 - a) *Deal costs* – securing economies in contracting, monitoring, planning, communicating, and enforcing exchanges;
 - b) *Agency costs* – achieving economies in monitoring managers and strategies, e.g. due to direct governance participation and the monitoring value of patronage returns; and

- 3) Serving missing markets:
 - a) *Member demand* – securing information economies in communicating member product preferences where “the market” otherwise fails to meet them; and
 - b) *Consumer demand* – achieving information economies in the reflection of consumer preferences in farm activities and product specifications.

Included under *risk management strategies* are:

- 1) Direct strategies:
 - a) *Pooling* – averaging prices across time and markets;
 - b) *Savings “bank”* – saving member returns in good times and paying them back in bad times;
 - c) *Maintain the market* – producing returns in times when non-cooperative firms would abandon a market; and

- 2) Indirect strategies:
 - a) *Conservative investment* – restricting cooperative investment to “safe” assets;
 - b) *Diversification* – expanding cooperative investment to include risk-reducing, non-member centred assets; and
 - c) *Selective vertical integration* – integrating into markets with negative covariance between cooperative and member returns (another form of diversification).

Peterson and Anderson’s survey of actual cooperative strategies adopted by 21 US agricultural cooperatives strongly supports some of the more commonly suggested theoretical strategies:

- 1) 100% of the cooperatives examined pursued a competitive yardstick strategy, seeing their role as one of introducing competition in a part of the supply chain – e.g. dairy processing – that might otherwise expose farmer suppliers to market power abuse by an IOF processor;
- 2) 95% adopted a conservative investment strategy. Consistent with the capital constraint and portfolio problems discussed in Section 2.4 regarding traditional cooperatives, in practice the cooperatives surveyed compensate for the effects on owner-patrons of cooperative property rights limitations via investment strategy;
- 3) 81% attempt to maintain markets where non-cooperative firms would abandon them. This is important for farmers with product-specific, farm-level investments who need the surety of a guaranteed market for their products (otherwise facing stranded investments); and
- 4) 76% adopted a diversification strategy, with similar effects and rationale as the pursuit of a conservative investment strategy.

3.2.2 Applying the Economics of Ownership

General Observations about Agricultural Cooperatives

Hansmann (1996) provides an extensive survey of the incidence of (mainly US) agricultural cooperatives, and of the various costs of market contacting and ownership that, when weighed, suggest that cooperatives are the most efficient organisational form for the activities considered. He notes that such cooperatives account for significant proportions of agricultural output in both the US and Europe (see Section 5 for figures and comparisons), and have exhibited increasing vertical integration over time (see Section 3.4).

Hansmann begins by observing that there are good reasons for family-owned farming to remain a viable form of economic organisation. An ability to secure borrowings against farm land and equipment means access to capital is not a constraint given the current efficient scale of farming. Inputs are often simple and standardised, and farm outputs are readily marketable due to their relative standardisation and the ease at which their quality can be assessed. Conversely, using hired labour on farms can be problematic (problems in monitoring effort, and discerning output variations arising from effort and chance/weather), making owner-family labour an important farm input. With close ownership and labour supply there is little need to engage in costly monitoring of management, and collective decision-making is similarly low-cost. While family-farms require owners to bear risk, this can be offset by effort, crop/stock insurance, supply contracts, or

ownership of downstream processing/marketing to manage output price volatility, and in some countries, government support. Industrial farms are becoming more common in some countries (e.g. Cargill Inc. in the US, and in Russia following the restructuring of former collective farms), but family-owned farms remain viable, especially in the presence of forward integration by farmers into downstream activities. This viability is reinforced by continuing farmer preference for the autonomy and lifestyle aspects of family-ownership in farming.

Hansmann surveys agricultural cooperatives involved in bargaining, handling, processing and/or marketing/distribution (which we collectively refer to as *farm output cooperatives*), and then *farm supply cooperatives*. He observes that there are only three common types of producer-owned organisation – those owned by investors (i.e. IOFs, which can be regarded as capital-supply cooperatives), workers (labour-supply cooperatives), and farmers. Conversely there are many types of consumer cooperatives (including farm supply cooperatives, but also mutual banking and insurance companies, cooperative hardware chains, etc). He attributes this incidence of producer-ownership in various agricultural sub-sectors to four defining attributes:

- 1) Highly homogeneous inputs;
- 2) Multiple producers, none of which is able to efficiently supply the market by itself;
- 3) Compelling efficiency reasons for individual rather than collective ownership; and
- 4) Some degree of market power working against farmers in the purchase of their outputs if they relied solely on market contracting.

One of Hansmann's more interesting conclusions is that the latter consideration appears less decisive than the other three in the incidence of farm output cooperatives. In other words, within his framework of balancing the costs of market contracting and ownership, agricultural cooperatives often thrive relative to IOFs where the costs of market contracting due to market power in activities downstream of farming are not in fact high. Rather, they thrive because the costs of farmer ownership of downstream activities can be particularly low, especially where the producer-owners have highly homogeneous interests (which typically coincides with them having highly homogeneous farm outputs). We further examine evidence on the governance of farmer-owned organisations in Section 4.4, which includes evidence in support of Hansmann's conclusion, or suggests reasons why any additional governance costs associated with cooperatives (relative to IOFs) remain sufficiently compensated for by other considerations other than simple market power arising in downstream activities.

Hansmann's analysis of farm output and supply cooperatives is discussed in greater detail and expanded upon below.

Farm Output Cooperatives

An important consideration in the formation of farm output cooperatives is the competitive structure of farming relative to that of agri-food chain activities downstream of farming, such as processing and marketing. Farming is traditionally very competitive, with multiple farms producing relatively homogeneous outputs, many of which are often highly seasonal and perishable (e.g. milk, fresh fruit and vegetables) and hence offer farmers little scope to identify better options when confronted with an unattractive sale contract.

Agricultural processing, by contrast, is often much more highly concentrated due to large economies of scale, with few or perhaps only one feasible processor for perishable or otherwise costly to transport farm outputs in any given geographical region. Such concentration often arises in declining industries, where consolidation in or exit from processing leaves few competing buyers for farm outputs in a region. Agricultural producers in countries like New Zealand are also exposed to market power arising from scale economies and coordination/consolidation issues in international shipping (whether by sea or air), given much of the nation's output is destined for time-sensitive overseas markets. They are also often exposed to concentration in major overseas marketing channels such as supermarket chains.

These competitive imbalances expose farmers to potential market power abuse by concentrated processors and other downstream agents raising the costs to them of market contracting and make farmer ownership a natural hedge against such abuse. Farmer-owners influence the objectives of the downstream agents through the governance process, return any excess profits due to downstream market power to themselves via patronage returns, and/or improve their bargaining position relative to downstream agents they cannot own or otherwise control. Notably, some of this incentive for farmers to collectively own concentrated processors is diminished where there are liquid forward and/or futures markets for farm outputs, since in this case farmers can time the forward sale of their outputs and diminish their vulnerability due to seasonality and perishability. It is also diminished where domestic, trade area, and international competition laws develop in ways substituting for ownership protections.

Other costs of market contracting that farm output cooperatives can alleviate include those arising due to:

- 1) *Asymmetric information* – e.g. regarding output attributes or market conditions, can expose farmers and/or buyers/handlers to exploitation by each other when the other has superior information. Farm output cooperatives can provide information channels between farmers and customers that alleviate the costs of informational asymmetries otherwise held by intermediaries (although improved communications technologies can also significantly reduce farmer search costs, potentially at less cost).

- 2) *Risk-bearing* – farm output cooperatives can pool multiple output types to diversify farmer supply risk arising from volatile output prices. Alternatively, when outputs are storable (e.g. wool) they can stockpile more economic lots of output classes, time sales to avoid market flooding, or otherwise secure pricing premiums from more orderly sales of output.

Regulation has played a role in cooperative development. In the US, for example, fruit and vegetable cooperatives have sometimes been formed as a means to secure federal or state marketing orders under which farmers enjoy minimum/favourable output prices. Also, the exemptions offered to US farmers to collectively set output prices (such as through horizontally-integrated bargaining cooperatives) under the 1922 Capper-Volstead Act apparently encourage the formation of bargaining cooperatives. But Hansmann suggests such cooperatives are typically unable to effectively cartelise to inflate output prices, not least due to open cooperative membership and cooperatives' inability to restrict farmer output increases elicited by such increased prices. Indeed, he offers Ocean Spray as an example where low prices due to oversupply in the cranberry industry was remedied by product and brand development rather than attempts to cartelise.

Taxes and subsidies can also sometimes favour cooperative development. Low-interest loans, state funding for agricultural research programmes, or cooperative formation grants, are obvious examples. The relative tax advantage of cooperatives versus IOFs in the US may also play a role, but not in all countries where cooperatives arise. However, cooperatives have formed and flourished without such incentives, so while they might explain additional cooperative formation at the margin, they do not fully account for the existence of cooperatives.

Following Hansmann's model of ownership set out in Section 3.1, any advantages farmer-owned cooperatives offer versus IOFs in areas such as farm processing and/or marketing must also consider the relative costs of ownership arising under each type of organisation in determining which form is most efficient. Despite common arguments to the contrary (see Section 4.4), Hansmann suggests farm output cooperatives enjoy significant advantages relative to IOFs regarding ownership costs, which largely account for their existence and persistence.

As to farmers' ability to control their output cooperatives (cf Cook's (1995) "control problem" in Section 2.4.2), there are good reasons for them to enjoy advantages over investor-owners, with correspondingly *lower* agency costs arising from the separation of ownership and control. Farmers commonly produce only a few outputs which constitute the majority of their income, raising their incentives to monitor cooperative performance. They repeatedly patronise their output cooperative, typically over many years, making them very familiar with its operation and managerial performance. While the dominance of cooperative boards by owner-patrons can be said to limit useful aggregations of owner interest and the skills of those boards, they also bring a very strong

commercial focus and understanding of the cooperative and its industry, as well as of member interests. Finally, the geographical concentration of many cooperatives, or the use of cooperative federations for multi-region cooperatives, mean that farmers have both the opportunity and incentive to closely and actively monitor cooperative performance. Hansmann observes that farm output cooperatives tend to predominate where farmers produce one or only few commodities, enhancing owner-patron homogeneity and thus intensifying these advantages.

As to the costs of collective decision making in cooperatives versus IOFs, Hansmann suggests that (p. 136) “A critical advantage for farm [output] cooperatives, it appears, is the extreme homogeneity of interest among the typical cooperative’s members.” This interest alignment reflects the predominance of cooperatives handling only one type of highly homogeneous product (often to the point of fungibility among producers – e.g. milk), and hence a sole focus on maximising the returns from that commodity. Where farm output cooperatives handle multiple products (or product qualities), they typically ring-fence costs and returns for each as a means of mitigating conflicts between farmers supplying the different products (or qualities).

On the other hand, Hansmann echoes the caution raised in Section 2.4.1 regarding traditional cooperatives’ constraints in raising equity capital, and the “portfolio problem” discussed in Section 2.4.2. Farmer-owners of traditional farm output cooperatives have limited surplus capital for investment in their cooperative, and often worsen their overall portfolio risk by cooperative investment when, as commonly occurs, farm and cooperative output prices are positively correlated. However, despite these problems, cooperatives continue to develop and grow (see Section 4.5 for more). Evidently this constraint – which is not shared by IOFs – is not sufficient to outweigh the ownership cost advantages farm output cooperatives enjoy relative to IOFs.

Before turning to farm supply cooperatives, Hansmann addresses the question of why farmers should own downstream activities to secure these benefits, rather than farmers being owned by such downstream activities. In short, the answer appears to lie in the preservation of strong efficiency incentives and low agency and other costs arising under family-owned farming, as well as the economisation of both market contracting and ownership costs. As mentioned earlier, corporate farming is a viable competitor to family-owned farming, often with forward integration into downstream activities, but family farming persists as a viable model where farmers exploit the ownership and market contracting advantages offered through their ownership of farm output cooperatives.

Farm Supply Cooperatives

Farm supply cooperatives often arise in areas such as fertiliser, farm chemicals, livestock feed (for non-pasture based farming), seeds and in some countries, petroleum supplies. Increasingly they also arise in areas such as stock or crop genetics, and other areas involving research and

development, and artificial insemination. They also arise in farm banking and insurance. Hansmann's explanations and others for the incidence of farm supply cooperatives include:

- 1) Historical lack of competition in the supply of fertiliser and petroleum products, in part due to high transport costs precluding access to out-of-region supplies. This lack of competition can extend to the absence of supply for certain farm inputs unless farmers themselves combine to procure/make and supply them. The predominance of consumer cooperatives in Sweden is attributed by Hansmann to that country's traditionally weak antitrust laws.¹³
- 2) Informational advantages enjoyed by suppliers regarding the quality of fertiliser, seeds, and feed, meaning farmers have been exposed to being sold inferior quality supplies (although labelling regulations have alleviated such issues). Conversely, where capital markets/banks or insurers have been immature or otherwise slow to service farm communities a niche has developed for farmer mutual banks and insurers, enjoying informational advantages in assessing lending and insurance risks due to client proximity and familiarity/trust sustained through repeated personal interaction.
- 3) Costs of ownership, as for farm output cooperatives, tend to favour farmer ownership over IOFs in certain farm supplies. The products or services concerned often comprise a large share of a farm's ongoing costs, are relatively homogeneous, and are often supplied geographically. Despite capital access problems that can affect traditional cooperatives, these features lower the costs of farmer ownership, which benefits add to those from improved market contracting, offering farm supply cooperatives advantages over IOFs in these products or services.

A preference for farmers to own and operate their own farms has already been mentioned as a possible factor contributing to the incidence of cooperatives. Hansmann goes on to note that many suggest cooperatives to be a peculiarity of Scandinavian culture, or of ideologically motivated groups opposed to capitalism. In respect of farm supply cooperatives he concludes that their incidence appears to be relatively free of ideological or political biases, and that farmers rather tend to be conservative and capitalistic by temperament. As for farm output cooperatives, the ownership cost advantages enjoyed by farm supply cooperatives relative to IOFs tend to offer greater explanation for their incidence and persistence than the advantages they offer in terms of market contracting costs.

¹³ Although Nilsson (1997b) points to social and political reasons.

3.3 Model of Cooperative Evolution

Section 3.1 provided a general description of factors affecting organisational evolution. Van Dijk emphasises that cooperative structures are the outcome of their members' entrepreneurial and managerial strategies, product strategy (e.g. differentiation), and forces of market competition.¹⁴ Here we summarise a life-cycle model presented in Cook (1995) for the evolution of cooperatives through various cooperative models and in some cases to non-cooperative forms.

Cook lists the following embryonic theories of cooperative life-cycle:

- 1) *Wave theory* – cooperatives form in waves, especially in depressed times, and later fail in waves;
- 2) *Wind-it-up theory* – cooperatives outlive their usefulness once they secure required terms or prices;
- 3) *Pacemaker theory* – cooperatives persist where their existence disciplines competitors; and
- 4) *Mop-up theory* – farmers forward integrate into markets where static or declining markets provide IOFs with incentives to act opportunistically.

Building on these, Cook proposes the following five-stage life-cycle model:

- 1) Depressed prices or market failures (opportunism/hold-up) create incentives for producers to react collectively. Hence the *survival-defensive* origins of the six traditional types of US agricultural cooperatives:
 - a) farm credit cooperatives;
 - b) rural utility cooperatives (e.g. electricity, telephony);
 - c) competitive yardstick local cooperatives;
 - d) multi-functional regional cooperatives;
 - e) bargaining cooperatives; and
 - f) marketing cooperatives.
- 2) Cooperatives formed to address short-term market fluctuations tend to be short-lived, but those confronting structural market failures produce enduring benefits and survive.

¹⁴ Personal communication, Professor Gert van Dijk, Cooperative Council for Agriculture and Horticulture (NCR), The Netherlands.

- 3) Cooperatives surviving stage two cause competitors to modify their behaviour, meaning prices between cooperatives and investor-owned firms converge, resulting in greater attention being paid to the five general problems associated with cooperatives discussed in Section 2.4.2 (i.e. the free-rider, horizon, portfolio, control and influence cost problems).
- 4) With the spotlight being turned on these cooperative property rights issues, consideration turns also to the tradeoffs if the cooperative should:
 - a) exit – i.e. liquidate, or restructure as an investor owned firm;
 - b) continue – either seek outside capital without converting to investor ownership, or seek to ensure financial responsibility is shared proportionally among members; or
 - c) transition – to an NGC.
- 5) Cooperative leadership chooses among these three options. Under the second, strategic alliances and joint ventures are used to obtain equity, or proportionality of internal funds is sought by better aligning capital contribution, voting and/or other attributes with patronage (such as through ring-fencing or reducing the number of cooperative activities). Under the third, emphasis is placed on value-added activities, and measures that mitigate the five ownership-related problems identified above (such as fair-value share valuations, and increasing share liquidity).

Cook suggests that among US agricultural cooperatives there are two apparent post-1990 phenomena:

- 1) traditional cooperatives are adjusting as per stage five of the above life-cycle; and
- 2) there has been a dramatic rise of NGCs (indicating more *offensive* rather than historical *survival-defensive* cooperative strategies).

He offers 12 factors that will contribute to ongoing collective action in US agriculture, including traditional factors such as transaction-specific investments leading to hold-up, but also others such as:

- 1) Sharing risk through relational contracts;
- 2) Responding to reputation and quality assurance requirements of trading partners; and
- 3) Attracting investment by ameliorating traditional cooperatives' property rights constraints.

3.4 Contemporary Drivers of Cooperative Evolution

3.4.1 Trade Liberalisation and Increasing Competition

New Zealand farmers face the same challenges as those confronting their counterparts overseas. Indeed, due to New Zealand's economic liberalisation in the 1980s, not least of agriculture, New Zealand farmers face those challenges to a greater extent than many of their foreign competitors, who often enjoy ongoing state support and protection to varying degrees, particularly in the US and EU. In addition New Zealand farmers confront the perennial challenge of distance from key export markets, raising not just the costs of transporting their outputs to customers, but far more importantly, the costs of exchanging information and coordinating between producers and customers.

International trade liberalisation, including in agricultural products (particularly over the last decade), offers New Zealand farmers the promise of improved foreign market access. It simultaneously offers improved access to those markets by its main export competitors, increasing the intensity of agricultural competition. Such competition places renewed pressure on producers to improve efficiency and increase productivity. These improvements are needed at all levels in the supply chain. At the farm level this requires improvements in farming practices that often require investments in research and development, or technology diffusion (such as rural broadband roll-out to enable tighter coordination between farmers and processors). In each case there are scale economies to be achieved through farmers acting collectively, whether through cooperatives or otherwise.

At the downstream level there is the need to fully exploit any scale economies in processing and marketing, placing renewed pressure on smaller downstream organisations to combine with others. Such reorganisations are facilitated by transport cost savings achievable through the tighter coordination enabled by innovations in information and communications technologies, as well as by improvements in storage and transportation technologies. And just as farmers have historically faced an incentive to cooperate to offset or displace market power in immediate downstream activities, there are now increased pressures for bargaining advantages to be achieved through scale in downstream activities when contracting with concentrated agents even further down the chain (such as value-added food producers, shipping lines, or supermarket chains).

However, efficiency and productivity gains are necessary but unlikely to be sufficient for New Zealand farmers to maintain market share in an increasingly competitive export environment. Greater product differentiation through brand development, as well as through shifting away from

commodity production to value-added products, is likely to play an increasingly important role.¹⁵ This requires technology and expertise not always readily available to traditional agricultural suppliers, such as improved stock genetics at the supply end, through to processed food production and marketing/distribution at the other. Hence there is a role for farmers and their immediate downstream processors to cooperate in developing such technology and expertise in-house, or to secure it via tie-ups – through ownership or otherwise – with others possessing the requisite intellectual capital.

3.4.2 Changing Consumer Preferences

Greater diversity and strength of consumer preferences add to these imperatives. Concerns for animal welfare and food safety, as well as environmental sustainability, provide both opportunities and threats for New Zealand farmers. Where they can identify and respond to such preferences in a timely fashion this presents an opportunity for market development. Conversely, a failure to develop information channels and coordination mechanisms to identify and respond to such preferences in a timely fashion risks New Zealand farmers facing declining market share and even the spectre of renewed non-tariff market barriers through regulation. Obvious examples include non-GE and/or organic branding, pasture-fed cattle free of BSE, hormone- and antibiotic-free livestock, and environmentally-friendly shipping technologies (e.g. reducing the litres of fuel oil burnt per kilogram of meat transported from New Zealand to the UK). As Coffey (1993, p. 1132) puts it, the industrialisation of agriculture over the past half century “is shifting from production-driven technologies of suppliers to the consumer-driven requirements of processors.” Such a shift emphasises the growing importance of coordinating the agri-food supply chain “from gate to plate.”

More refined consumer preferences also obviously increase the need for a shift away from commodity production to both branding and value-added processing. Where New Zealand producers meet those preferences via third party processors and marketers, this implies increasing demands regarding product specifications, and timeliness and security of supply. Not only do these require greater coordination along the supply chain, but they result in a simultaneous need for greater specialisation at the farm level for the production of farm produce meeting certain quality standards or specifications. Supply security requirements – fuelled by the need for downstream processors to secure efficiencies through improved year-round capacity utilisation – require processors to diversify procurement, taking supplies from multiple locations, including internationally. This not only reduces seasonal supply variations, but also diversifies processors’ risks from unwanted GE contaminations, BSE outbreaks, and the like. The coordination benefits offered by traditional agricultural cooperatives provide some of the means to respond to these drivers, but also create increasing tensions in doing so, especially where their responses require

¹⁵ There is not a sharp dichotomy between value-added and commodity products. Traceability of an otherwise homogeneous product to the farm, for example, may be sufficient to convert it to a value-added product.

new capital, or involve greater differentiation among farm suppliers. Variations on the traditional cooperative model, such as NGCs focused on value-added activities involving more tightly-controlled supply volumes, types and qualities, become more necessary and useful in this context.

3.4.3 Producer Board Dismantling and Organisational Competition

At the organisational level, agricultural trade liberalisation has placed pressure for the dismantling of traditional structures such as single-seller desk statutory producer boards, which in New Zealand involved majority farmer control. Since their inception, often in response to poor farm output prices, such boards have provided a substitute for the horizontal and vertical integration, and resulting agri-food supply chain coordination, that might otherwise be offered via IOFs or agricultural cooperatives. Dairy farmers in New Zealand (Fonterra), Australia (Bonlac and Murray Goulburn) and the UK (Milk Marque) were quick to adopt or strengthen cooperative structures in response to dairy deregulation. While the subsequent enforced break-up of Milk Marque into three regional cooperatives in 2000 due to competition concerns has diminished the effectiveness of the cooperative alternative to the statutory board in Britain, it has thus far enjoyed some success in managing the transition from producer board to deregulation. As we see in Section 5, at least one New Zealand agricultural sub-sector, the apple industry, has not yet established a viable alternative to the former Apple & Pear Marketing Board, and has suffered as a consequence.

Trade and investment liberalisation has also enabled greater integration by multinational food producers into the food supply chain. Accompanying the rise of corporate farming, particularly in the US, there is therefore an increasing concentration of investor ownership in the global agri-food supply chain. Whereas US multinational food companies in particular were once content to achieve international reach via strategic alliances and joint ventures, Desai et al. (2003) report that they now prefer outright ownership of foreign operations. This is not only to achieve tax efficiencies otherwise frustrated by alliance partners concerned with local rather than global profitability, but also to avoid unwanted transfers of intellectual property to alliance partners, and to allow global production coordination and intra-firm transfers that can conflict with local partners' goals.

Such ownership realignments, as well as innovations in cooperative types themselves, change the competitive make-up of domestic agricultural sectors. In some cases this adds impetus for smaller cooperatives, lacking both scale and opportunities or the capital necessary to achieve scale through merger or acquisition, to convert to IOFs. In other cases such conversions provide the opportunity for multinational food concerns to gain domestic interests. For those cooperatives with merger or growth opportunities this has led to increased domestic merger and acquisition activity, as well as the growth of *transnational cooperatives*, being cooperatives with owner-patrons in more than one country. Where cooperatives face pressures for differentiated supply, either due to consumer demands or the rise of differentiated NGCs, and/or greater need for capital to enable

value-added processing, traditional cooperatives can face pressures to unbundle according to producer types. Alternatively, producers of differentiated outputs face greater pressure to establish their own NGCs to enable them to secure the benefits of differentiation otherwise suppressed by pooling in traditional cooperatives.

Ownership realignments have also spawned hybrid arrangements involving strategic alliances and joint ventures between cooperatives, and between cooperatives and IOFs. Examples include Fonterra's alliance with Nestle in North, Central and South America, and joint ventures with Arla Foods in Great Britain and Dairy Farmers of America. Another variation is for cooperatives to act like IOFs in acquiring stakes in other domestic or foreign cooperatives, such as Fonterra's acquisition of Bonlac in Victoria. These hybrids simultaneously enable agricultural cooperatives to expand and integrate more deeply into the global agri-food supply chain, and/or provide multinational food concerns with access to supplies that they cannot secure through ownership, including where cooperative ownership is the obstacle to them doing so.

3.4.4 Cooperative Adaptations

Thus cooperatives are adapting to these global forces for change in ways that involve either greater or lesser cooperative enterprise, depending on the particular circumstances. Reflecting the commonly defensive origins of agricultural cooperatives and their long-standing substitutes, statutory producer boards – either to deter downstream market power, achieve scale economies in processing and marketing, and/or achieve benefits through coordination in the face of poor output prices – much of the current cooperative response to these global drivers is also defensive. Strengthening or adopting cooperatives to assume the functions and benefits formerly offered by producer boards is one example. Merging cooperatives both domestically and internationally, or forming alliances between cooperatives and IOFs, to achieve scale and scope economies are further examples. If one thing is clear, agricultural cooperatives cannot afford to stand still in the face of changes to the international agri-food supply chain.

At the same time cooperatives have been increasingly proactive in pursuing downstream opportunities or positioning themselves to do so. Cooperatives issuing investor shares to access external capital while preserving farmer control provides an example of organisational innovation enabling cooperatives to integrate further downstream by acquisition. Converting to IOFs represents a more pathological strategy, in that it requires the relinquishment of farmer control, but it demonstrates that cooperatives have been able to adapt their form to position themselves for ongoing evolution. NGC formation to produce differentiated, value-added products is yet another.

3.5 Policy Implications

- 1) Cooperative evolution – whether to new forms of cooperative, IOFs or otherwise – should be regarded as a healthy sign of institutional flexibility, supporting the attainment of North’s (2003) concept of “adaptive efficiency.”
- 2) The *creation* of cooperatives in New Zealand agriculture, especially since the country’s economic reforms in the 1980s, is unlikely to reflect artificial stimuli such as taxation preferences or subsidies. For reasons discussed in Section 5, however, cooperative meat processing companies may be argued to have benefited from policy preference in the 1980s, but any such preference has long since passed. A case can also be made that the dominance or lack of cooperatives in certain horticultural sectors has arisen at least in part due to industry reforms, which also is discussed in Section 5. Aside from these, however, it is difficult to argue, *prima facie*, that the impetus for cooperative creation in New Zealand agriculture derives from anything other than the intrinsic drivers common to cooperative formation in agricultural sectors internationally.
- 3) The *persistence* of cooperatives in New Zealand agriculture might be argued to reflect the commonly-identified problems with property right specification in traditional cooperatives. Where ownership claims are not market-priced and tradable, as is the case for traditional cooperatives, this presents an obstacle to the market for corporate control to freely operate to enable organisational change. However, the same could be said of many IOFs in New Zealand which, although they have well-defined ownership rights in the form of shares, those shares are closely held and not listed on any exchange with transparent price discovery. Hence it would be unreasonable to suggest cooperative persistence is solely attributable to property rights problems.
- 4) The persistence of cooperatives is instead more likely to be due to the need for scale and coordination in production, marketing and exporting in the case of farm output cooperatives, and market power in the case of farm supply cooperatives.
- 5) Similarly, since policy offers little advantage to any particular organisational type over another in New Zealand, and the transaction costs of registering different types of organisation are not high, the persistence of cooperatives in New Zealand agriculture is unlikely to reflect institutional obstacles. (We have not inquired as to whether there are any tax-based obstacles to cooperatives converting to other organisational forms, such as tax liabilities on retained patronage funds being crystallised on conversion.) Certainly cooperatives in various agricultural sub-sectors have been able to merge, take over other cooperatives or IOFs, or otherwise reorganise, suggesting institutional flexibility.

- 6) Cooperatives – or in this case mutuals – have been able to convert to IOFs in New Zealand (e.g. Tower, National Mutual). Where other cooperatives have persisted instead of so converting this would appear to be more a reflection of member preference than institutional barriers. Indeed, since members can sometimes face a strong incentive to convert to an IOF, so as to monetise and benefit from otherwise unallocated reserves, cooperatives' persistence suggests that their members perceive strong inherent benefits to continued cooperation.
- 7) Cooperative evolution presents a greater policy problem in countries such as the US – where particular cooperative types have been seen as important instruments of rural development and for achieving competition with IOFs – than in New Zealand, where they are more tolerated than fostered. Since cooperatives are not used as a policy instrument – such as to enhance competition – any changes in cooperative form do not risk either the subversion of policy aims or exploitation of any associated policy preferences.
- 8) On the contrary, as discussed in Section 2, New Zealand's cooperative legislation is relatively free of philosophical or political bias, instead offering a flexible and fairly generic framework for cooperative development. This has advantages in allowing new forms of cooperative to arise as solutions to changing business challenges, and for existing cooperatives to similarly vary their organisational form while maintaining patronage-based ownership and farmer control.
- 9) Given the competitive global environment in which New Zealand's typically export-oriented farmers operate, many of the inherent drivers for cooperative formation common overseas apply equally in New Zealand, and in some cases more so given the country's distance from its key markets, and continuing trade obstacles such as in the US and EU.
- 10) If cooperatives in New Zealand are perceived to arise as market-driven farmer responses to issues such as:
 - a) immature capital and insurance markets, providing farmers with inadequate services;
 - b) inadequate competition law protections against market power abuse of farmers by IOF parties downstream;
 - c) inadequacies in food safety, environmental, animal welfare or other regulations,

then this might be taken as a cause to examine reform in each of those areas. However, if cooperatives provide endogenous and flexible farmer-driven responses to each of these, then the transaction costs of them doing so are clearly not prohibitive. Absent pleas from farmers for alternative solutions, the superiority of regulatory alternatives must therefore be carefully weighed.

- 11) To the extent that regulatory issues, or deficiencies in organisational flexibility, are thought to unduly favour cooperative creation or persistence, Williamson's (2001) "remediableness criterion" described in Section 3.1.1 offers a useful test for evaluating the merit of intervention.

4. Theoretical and Empirical Literature on Cooperatives

In this section we provide brief surveys of the theoretical and empirical economics literature on a number of topics pertinent to an understanding of cooperatives, and where possible, to an assessment of their merits relative to IOFs. The focus is mainly on farm output cooperatives, but farm supply cooperatives are also touched on. These surveys contain much material and are provided for reference purposes. Readers more interested in the application of the economics of cooperatives to our survey of the role and significance of cooperatives New Zealand agriculture can safely skip to the next section.

We begin our surveys by looking at the (relative) efficiency and financial performance of cooperatives, to see if cooperatives can be expected to, or do, exhibit systematic advantages or disadvantages in this regard. How cooperatives compete, both with other local firms for procurement but also in their output markets, is then examined. We follow with an examination of the extent to which cooperatives innovate, and differentiate and/or add value to their products. The governance of cooperatives is considered to see if it exhibits systematic (relative) advantages or disadvantages. We then look at whether or not cooperatives face obstacles in accessing capital, with any associated increases in bankruptcy risk, or curtailment of investment and growth. Finally, before summarising possible policy implications, we look at whether cooperatives contribute to or detract from the “adaptive efficiency” notion introduced in Section 3.1.

In providing this survey we add the caution that the simple identification of differences between cooperatives and IOFs does not automatically indicate the existence of policy issues requiring attention. Indeed, only if cooperatives detract disproportionately from adaptive efficiency would there appear to be a clear case in favour of policy response, since in that case the normal process of organisational adaptation and competition might be thought to fail, entrenching possibly inferior organisational solutions. If they do not clearly detract from organisational efficiency, then differences predicted to arise, or actually arising, between cooperatives and IOFs do not inherently represent areas requiring policy attention. For the reasons set out in Section 3.1, it may well be true that cooperatives are superior or inferior to IOFs in some respect, but given the enduring coexistence of either form it must be assumed that they each have counter-veiling costs or benefits that mean they are least-imperfect organisational responses to the issues faced by owners and other parties in their respective industries, assuming adaptive efficiency.

Conversely, where cooperatives exhibit particular disadvantages relative to other organisational forms, such as increased bankruptcy risk – especially if these give rise to significant externality costs – then these areas may merit policy consideration. However, even then, it must be asked whether these features are genuine differences between cooperatives and IOFs, or simply a reflection of the fact that each organisational form arises more naturally in response to particular economic drivers, meaning that a direct comparison of cooperatives and IOFs without controlling

for these drivers is not meaningful. For example, if cooperatives more naturally arise in declining industries where bankruptcy risk is inherently high and IOFs are not viable, then this raises different policy questions if they are more prone to bankruptcy and coexist with IOFs in non-declining industries. We will attempt to draw out some of these issues in our discussion of possible policy implications in Section 4.7.

4.1 Efficiency and Financial Performance

As noted by Hardesty and Salgia (2004), recent troubles at high-profile agricultural cooperatives in the US have led to debate about whether cooperatives as an organisational form are “destroying value.” For the reasons discussed above, the question is misplaced without also considering whether there are inherent or artificial obstacles to organisational competition. Indeed, the failure of non-performing cooperatives – just like that of non-performing IOFs – is *prima facie* evidence of adaptive efficiency. It would be the entrenched poor performance of an organisational form in the presence of obstacles to organisational change that would be more revealing.

However, the question of cooperative efficiency and financial performance has been the subject of many studies. Such studies typically fall into two classes – those focusing on estimated production functions and other measures of economic efficiency (such as pricing, technical, and scale efficiency), and those based on various financial ratios. Hardesty and Salgia point out that it is not strictly meaningful to consider cooperative performance in isolation, since cooperatives represent an extension of the production process beginning with their owner-suppliers (or customers). Thus from the perspective of a cooperatives’ owner-patrons, an assessment of cooperative performance should not consider just the cooperative portion of the productive entity. It should account for the total benefits derived by these owner-patrons relative to what they would achieve from alternative supply and investment routes.¹⁶ Care must be paid to the fact that cooperatives are often modelled as having a zero profit objective, with patrons securing their returns not on capital investment but via patronage returns. Hence simple comparisons with the profitability of profit-maximising IOFs will be skewed. Moreover, comparisons of cooperatives and IOFs should allow for the various “ancillary services” provided by cooperatives, such as member education and political representation, which increase cooperative production costs and affect efficiency assessments. However, as these authors note, data limitations, and stakeholder interest in cooperative-level performance measures, often result in researchers examining only cooperative-level data.

We consider various studies from each of the two main classes below.

¹⁶ More generally, the welfare implications of cooperatives for society at large would take into account their impact on total producer and consumer surplus.

4.1.1 Studies based on Financial Ratios

Main Classes of Financial Ratios and Predicted Relationships

Rimassi (1999) summarises the five main classes of financial ratio typically used in studies examining cooperative performance or comparing it with IOF performance:

- 1) *Profitability* – typically measured as return on equity. Cooperatives are expected to have lower profitability rates than IOFs due to their zero profit objective.
- 2) *Leverage* – typically measured using a debt to equity ratio based on book values. Cooperatives are predicted (specifically, by Lerman and Parliament (1990)) to have higher leverage than IOFs due to the capital constraint caused by property rights limitations (in traditional cooperatives, at least), and evidence for a moral hazard whereby cooperative managers perceive that their cooperative is more likely (than an IOF) to merge with another in the event of financial distress than to face bankruptcy. Thus IOF managers would be more concerned about the costs of bankruptcy and hence adopt lower leverage than would cooperative managers.¹⁷
- 3) *Solvency* – the cooperative's ability to service its debt, typically measured as an interest coverage ratio such as earnings before interest and tax to annual interest expense. In cooperatives solvency is expected to be lower than for IOFs for the same reason that leverage is expected to be higher.
- 4) *Liquidity* – typically measured by cash plus receivables to current liabilities (i.e. the quick ratio), measuring the firm's ability to meet short-term liabilities as they fall due. For the same reason that solvency is predicted to be lower in cooperatives than IOFs, it is expected to be lower here also.
- 5) *Efficiency* – typically measured by some form of asset turnover ratio, e.g. sales to total assets. Because of the moral hazard issue described above, cooperatives may over-invest relative to IOFs, suggesting they should have lower asset turnover. Similarly, where cooperatives stand ready to accept all produce supplied by their members (whereas IOFs will contract for supplies and hence have better control over

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Hardesty and Salgia (2004) observe that the prediction that cooperatives will have higher leverage than IOFs contradicts that of conventional, tax-based financial theory. Tax laws in the US encourage IOFs (but not cooperatives) to use higher levels of debt – which is not the case under New Zealand tax law – making it unclear as to which effects should dominate. We thank Eric Hansen of Fonterra for also pointing out that the traditional cooperative portfolio problem encourages more conservative cooperative leverage (to counterbalance higher owner-patron financial risk due to poor diversification). Moreover, the horizon problem means cooperatives tend to return a higher proportion of their returns to owners than do IOFs, reducing the need for higher leverage to decrease the free cash flows available for dissipation by managers. Both of these suggest lower leverage for cooperatives than in IOFs. This prediction appears more consistent with evidence on relative cooperative leverage, as will be seen later in this section.

processing requirements), this creates a need for excess capacity to cover uncertain demand for processing.

Comparing Cooperatives to IOFs

Lerman and Parliament (1990) investigate the comparative financial performance of cooperatives and IOFs in the US fruit and vegetable processing and dairy industries over 1976 – 1987, controlling for size differences, based on such ratios. Contrary to their predictions, cooperatives and IOFs were similarly leveraged and generated similar returns on equity. Fruit and vegetable processing IOFs had higher liquidity and asset efficiency than cooperatives, but the reverse was true for dairy cooperatives. These authors conclude that cooperative dairy processors outperformed comparable IOFs, whereas the performance of cooperative fruit and vegetable processors was lower but not significantly different from that of comparable IOFs.

Similarly, Parliament et al. (1990) focus on the relative performance of a sample of cooperatives and IOFs in the US dairy industry over 1971 – 1987. They found that the cooperatives performed significantly better than the IOFs in terms of leverage, liquidity and asset efficiency, but that there were no statistically significant differences between the two types of organisation in terms of profitability.

These results vary with those of Schrader et al. (1985), who examined the relative performance of US cooperatives and IOFs across various agricultural sectors over 1979 – 1983. They found no differences in asset returns for cheese plants, grain elevators and farm supply firms, but large, diversified agribusiness IOFs had significantly higher returns on assets. Contrary to predictions, IOF cheese plants, grain elevators and farm supply firms were more leveraged than their cooperative counterparts, but large, diversified agribusiness IOFs had lower leverage than their cooperative counterparts. Consistent with predictions, cooperative cheese plants, grain elevators and farm supply firms had lower asset turnovers (i.e. were less efficient) than IOFs, but this was reversed for large, diversified agribusiness cooperatives.

Using more recent US data, Hardesty and Salgia (2004) examine claims that cooperatives “destroy value” by comparing the performance of cooperatives and IOFs in the US dairy, farm supply, fruit and vegetable, and grain sectors over 1991 – 2002. Overall they find comparable performance between the two types of organisation. Except in the dairy sector, cooperatives had lower asset turnover (i.e. lower efficiency) than IOFs, as predicted due to the need for cooperatives to maintain greater peak capacity than IOFs. However, cooperatives in all four sectors had lower leverage than IOFs, contrary to Lerman and Parliament’s predictions. The authors suggest that this means that the tax-based preference for debt faced by US IOFs relative to cooperatives outweighs any capital constraint faced by cooperatives.

Hardesty and Salgia found no conclusive differences between IOFs and cooperatives regarding profitability and liquidity, and in the cases where cooperative liquidity was lower, they attribute this to the need for cooperatives to redeem the equity of exiting patrons. Cooperatives in the fruit and vegetable sector were the weakest, concentrating on generic, low-value added products, with low asset turnover and cyclical profitability. Where cooperatives were involved in value-added activities they could increase asset turnover by utilising plant year-round, and enjoyed more stable profits. No evidence of declining cooperative relative performance was found. The authors conclude that claims of cooperatives destroying value are not supported by their analysis.

Finally, Chan and Robb (1998) present New Zealand evidence on the relative profitability of a cooperative and IOF operating in the same industry, albeit in the wholesale grocery and distribution industry – i.e. a customer rather producer cooperative, and not in the agricultural sector. Specifically, these authors compare the performance of Foodstuffs (an NGC-like cooperative) and Progressive Enterprises Limited (an IOF) over 1991 – 1997 following the methodology of Lerman and Parliament (1990). They found that the financial ratios were consistently of the opposite relative magnitude to those predicted. Furthermore, comparing the two organisations in terms of a combined measure of cash flows and profits also rated Foodstuffs ahead of Progressive, with the latter generating cash flows but not profits, whereas Foodstuffs has enjoyed growth in both cash flows and profits. Despite theoretical predictions to the contrary, the authors conclude that Foodstuffs has outperformed Progressive, having higher profitability, less leverage, better solvency and liquidity, and greater asset efficiency. Consistent with evidence discussed in Section 4.4, Chan and Robb suggest that the cooperative need to monitor both profitability and cash flow (since the latter is required for annual patronage returns and to meet member equity redemptions) forces cooperatives to be more accountable to their owners than IOFs, and better able to withstand financial difficulties.

Inter-Cooperative Comparisons

Lerman and Parliament (1989) examine whether there are size and industry effects on the profitability, efficiency, liquidity and capital structure of cooperatives. Their sample comprised 43 US dairy, supply, food marketing and processing, cotton and grain marketing cooperatives over 1970 – 1987. They found that significant size effects were evident, with larger cooperatives having higher asset turnover (i.e. greater efficiency) than smaller ones. Conversely, smaller cooperatives were more profitable and liquid than larger ones. This suggests that the benefits of size do not necessarily translate into profitability. However, no significant size effects were evident in capital structure (i.e. leverage).

As to industry effects, dairy cooperatives exhibited the highest efficiency, followed by grain and supply cooperatives, and then food marketing cooperatives. Dairy and supply cooperatives had the highest liquidity, and food marketing cooperatives that operated on a pooling basis had higher

profitability. Overall the dairy cooperatives were concluded to show the strongest performance, but the authors suggested this may have been due to government guaranteed milk prices. Conversely, food cooperatives were the worst performers, causing the authors to suggest (contrary to Hardesty and Salgia (2004)) that cooperatives may be ill-suited to value-added processing, instead better at raw produce marketing. Interestingly, they observed an overall declining trend in the profitability of all cooperatives examined regardless of industry or size, once again at odds with the more recent evidence of Hardesty and Salgia.

4.1.2 Studies based on Economic Efficiency and Other Measures

Comparing Cooperatives to IOFs

Using 1972 data for a sample of US milk processing cooperatives and IOFs, Porter and Scully (1987) examine the relative efficiency of these organisations according to eight different measures (such as price, scale, and technical efficiency). They find that cooperative milk processors were on average only 75.5% as efficient as their IOF counterparts, and that by reorganising as an IOF a cooperative milk processor could raise output 32.4% without requiring extra inputs. They attributed this inefficiency to problems with cooperative property rights, specifically the horizon, control, free rider, and portfolio problems as summarised in Cook (1995). Porter and Scully's analysis assumes there is no monopsony power in milk processing, which can be supported in the US where milk processing is more oligopsonistic in nature, but they acknowledge that cooperatives may enjoy efficiency gains in the presence of monopsony power.

Boyle (2004) investigates the economic efficiency of Irish dairy cooperatives over 1961 – 1987. He notes that cooperatives are thought to give rise to inefficiencies in two ways:

- 1) Cooperatives suffer from technical efficiency because of principal-agent problems (the control problem), and allocative inefficiency due to the horizon problem; and
- 2) Cooperatives price inefficiently, paying producers more than the cooperatives' marginal product of milk.

Focusing on the second type of inefficiency, Boyle's data suggest that cooperatives price their inputs "as if" they were profit maximisers (i.e. like IOFs), and did not price inefficiently as postulated. In fact, these cooperatives were pricing as efficiently as other organisational forms, and Boyle concludes that the emergence of Irish IOF dairy companies in the 1980s and 1990s was not a consequence of this postulated form of cooperative inefficiency.

Continuing with dairy industry evidence, but this time turning to Australia, Doucouliagos and Hone (2000) compare the efficiency of dairy processing with “best practice.” They note that the Australian dairy industry was dominated by two large Victorian cooperatives, Murray Goulburn and Bonlac, accounting for half the market. Using data for 1969 through 1996, they find modest technical progress, and observe some convergence in productivity levels across states, suggesting that dairy deregulation had encouraged improved industry performance. They conclude that the Australian industry is operating at a high level of technical efficiency.

Finally, Sullivan and Scrimgeour (1995), consider the performance of the New Zealand Dairy Board (NZDB) relative to that of Nestle (the Swedish IOF), over 1969 – 1992. Although constrained by lack of financial data from the NZDB, and the fact that Nestle was a diversified food processor and the NZDB a statutory marketing and distribution cooperative, estimates were made of each organisation’s costs and the extent to which each organisation added value to its product. They estimate the NZDB’s cost of goods sold to be 27% higher than that of Nestle, suggesting the latter was more efficient. Moreover, Nestle was estimated to add 12% more value to every dollar of sales than did the NZDB. Higher NZDB sales volatility was attributed to its greater proportion of sales accounted for by commodity trading. Their conclusion that Nestle appeared to be more efficient than the NZDB contrasts with that of Lerman and Parliament (1990), and Parliament et al. (1990), for their dairy sector analyses.

Inter-Cooperative Comparisons

Ariyaratne et al. (1997) investigate the following three efficiency measures for a sample of 89 US grain marketing and farm supply cooperatives over 1988 - 1992:

- 1) *Technical efficiency* – measuring whether a producer employs the most efficient technology in its operations;
- 2) *Allocative efficiency* – assessing whether the optimal levels of inputs at a given price are used in deriving outputs; and
- 3) *Scale efficiency* – examining whether a firm’s size is optimal.

These authors cite previous research showing that IOF grain marketing and farm supply firms were more efficient than cooperatives, that there are economies of scale in farm supply and marketing cooperatives, and that more than half of such cooperatives experienced financial stress due to low profitability. Based on their sample, among other things they find that:

- 1) While most cooperatives could improve efficiency by increasing their scale, the potential gains were relatively small given high observed scale efficiency;

- 2) Larger cooperatives tended to be more efficient overall compared to smaller ones; and
- 3) Cooperatives with a more diversified output mix are more technical, scale and overall efficient compared to specialised cooperatives.

Finally, Hailu et al. (2005) examine the productive efficiency of 54 Canadian fruit and vegetable cooperatives over 1984 – 2001. They found their results to be sensitive to the choice of methodology, but in general concluded that production costs for these cooperatives could have been reduced by 28% had they been operating on their respective production frontiers. Significant variation in efficiency was evident in their sample, with smaller and larger cooperatives the most efficient. Finally, financial leverage was found to have a negative effect on cost efficiency, suggesting a negative impact of financial pressure on cooperatives.

Other Efficiency Predictions

Evans and Guthrie (forthcoming) develop a theoretical model showing that supplier cooperatives suffer from an inefficient over-supply of inputs. This arises due to suppliers responding to average rather than marginal revenues (cf Albaek and Schultz (1998)), and because incompletely specified property rights (in traditional cooperatives) – in this case unowned capital – generates capital returns to suppliers in proportion to their supply (boosting the returns to supply). They show that the inefficiency this gives rise to can be resolved if the cooperative's shares are priced at the present value of expected dividends (i.e. at true "fair value"), and open supplier entry and exit decisions are taken solely on the basis of the profitability of membership. In such circumstances the traditional cooperative horizon problem is also resolved. Hart and Moore (1998) similarly predict that the investment efficiency of cooperatives would be enhanced through tradable ownership rights.

4.1.3 Summary – Efficiency and Financial Performance

The main messages regarding cooperative efficiency and performance emerging from the above survey are:

- 1) Despite theoretical predictions, dairy cooperatives tend to outperform their IOF counterparts in terms of various efficiency and financial performance measures. Porter and Scully (1987) find the reverse, but acknowledge that their result is sensitive to the assumed absence of monopsony power in milk processing. Sullivan and Scrimgeour (1995) found the NZDB to be less efficient and to add less value than Nestle, but acknowledge that the activities of each were not very comparable.

- 2) For other cooperative types (e.g. fruit and vegetable, farm supply), cooperatives are sometimes found to exhibit less asset efficiency than IOFs (e.g. Lerman and Parliament (1990), and Hardesty and Salgia (2004)), but otherwise comparisons are mixed (Schrader et al. (1985)) or reveal no significant differences in performance. In the case of New Zealand wholesale grocery and distribution industry, Chan and Robb (1998) find that the cooperative outperformed the IOF in all areas considered. As Sexton and Iskow (1993, p. 15) put it after analysing and critiquing available evidence: “No credible evidence exists to support the proposition that cooperatives are inefficient relative to investor-owned businesses.”
- 3) Larger cooperatives tend to be more efficient than smaller ones, but smaller cooperatives have been found to be more profitable. More diversified cooperatives have been found to be more efficient than specialised cooperatives.
- 4) Overall there is no clear support from the studies surveyed for the theoretical prediction that cooperatives will be less efficient and/or less profitable than IOFs, and certain of the inefficiencies predicted to arise in traditional cooperatives are in any case predicted to be resolved with tradable cooperative ownership rights based on fair values.
- 5) It is not possible based on the available studies to adequately gauge the impact of any favourable tax treatments or other policy preferences enjoyed by cooperatives relative to IOFs. Where IOFs coexist with cooperatives despite these cooperative preferences, it remains possible that the relative performance of cooperatives as assessed has been biased by any such preferences.

4.2 Competition and Competitiveness

It is not unusual for industries to comprise both cooperatives and IOFs. This raises the question as to how such coexistence affects the behaviour of the organisations concerned, but also how their choice of organisational form is shaped by their competitive environment. There is little theoretical or empirical work on the question of how the coexistence of cooperatives and IOFs affects welfare where the cooperative competes primarily internationally but also supplies domestically. Much of the available work considers the effects of cooperatives on competition in mixed domestic industry structures and vice versa. However, some material is available on the international competitiveness of cooperatives.

Each of these questions is touched on below, with special mention made on the effects of mixed industry structures on input supply procurement (a topic of interest for the New Zealand meat industry, as discussed in Section 5.3). It is also important to consider the implications of the available research with the international focus of most New Zealand agricultural cooperatives in mind (i.e. welfare analyses in the case of exporting agricultural cooperatives may rightly place greater weight on producer benefits than they do on foreign consumer gains or losses).

4.2.1 Competitive Effects of Cooperatives in Mixed Industry Structures

The Competitive Yardstick Effect

As noted in Section 3.2.1, all of 21 US agricultural cooperatives surveyed in Peterson and Anderson (1996) actively pursued a competitive yardstick strategy, seeking to force IOFs with market power in their industry to behave more competitively. Hoffman and Royer (1997) argue that the favourable public policy enjoyed by cooperatives in the US is due to their perceived pro-competitive influence on IOFs. They summarise the associated competitive yardstick hypothesis as follows: cooperatives will offer farmers more favourable prices for their outputs because they seek to offer service at cost (i.e. breakeven) rather than to maximise profits (as do IOFs). Competing non-cooperatives must therefore match these prices to avoid losing suppliers. This prediction is not universal, however, often being limited to open-membership cooperatives (which allow new members to join and do not limit their supply decisions). Closed-membership cooperatives have greater ability to restrict output and produce socially undesirable market performance in markets that are already not competitive.

Bounds on the Competitive Yardstick Effect

Indeed, while evidence exists in support of the competitive yardstick hypothesis, many authors find that this beneficial effect is not universal. Benham and Keefer (1991), for example, add that cooperatives require relatively homogeneous membership in order to compete with IOFs.

Using 1982 US census of manufactures data, Rogers and Petraglia (1994) examine the effect of cooperatives on industry price-cost margins. They find that the percentage of industry sales attributable to cooperatives has a significant negative effect on price-cost margins, consistent with the theoretical competitive yardstick effect of cooperatives. Within the food and tobacco processing markets, any abuses of market power were found to be more likely from large IOFs rather than agricultural cooperatives that have vertically entered into processing. They suggest this justifies the continuance of cooperatives' entitlement to limited antitrust exemptions under the US' Capper Volstead Act 1922.

However, using simulation to examine the competitive effects of cooperatives in oligopoly/oligopsonies under a range of market behaviours, Hoffman and Royer (1997) found that cooperatives can increase welfare under some structures/behaviours, but in fact decrease welfare under others (due to increasing costs of producing raw product, due to disproportionate cooperative market share and increased production intensity of its members).

Sexton (1990) concludes similarly, developing a theoretical model formally characterising the pricing behaviour of IOF processors in oligopsonistic markets in the absence and presence of cooperatives. With this model he examines the conditions under which the competitive yardstick hypothesis can be supported. Consistent with the qualification noted by Hoffman and Royer, open cooperative membership was required (among other things) for cooperatives to have a pro-competitive influence in a mixed duopoly shared with an IOF. He thus concludes that any favourable public policy toward cooperatives should be confined to those with open membership, and that in respect of competition policy, horizontal mergers are less problematic in industries including an open-membership cooperative, since opportunities to exercise market power in such an industry are diminished.

Extension of the Competitive Yardstick Effect

Cotterill (1997) examines a different question, namely under what conditions does the competitive yardstick effect extend from traditional, undifferentiated farmer-first handler situations to differentiated consumer product markets. To motivate his analysis he cites empirical work showing that a cooperative presence in differentiated product markets lowers the consumer prices of all brands. Cotterill develops a model showing that the competitive yardstick effect extends from

farmer-first handler markets to differentiated consumer products markets under two market structures:

- 1) oligopoly with significant barriers to entry; and
- 2) monopolistic competition with entry but only non-price competition, in which case cooperatives can also ensure the socially optimal number of brands (product variety).

Cooperative Oversupply as Credible Commitment and Prisoner's Dilemma

Like other authors, Cotterill notes that cooperatives with open membership are unable to raise prices anti-competitively because they cannot control members' supply decisions. Should a cooperative successfully raise the market price for farmer outputs, this elicits increased farmer supply which then depresses the price paid.

Albaek and Schultz (1998), however, argue that this particular mechanism offers cooperatives a competitive advantage over IOFs in an industry comprising a cooperative and IOF. They observe that traditional cooperatives tend to oversupply, since they typically cannot control member supply decisions. Members fail to internalise the full cost of increasing supply, which includes lost revenues to other suppliers if the market price falls in response to such an increase. Under certain market behaviours (Cournot duopoly), credibly committing to a high production level (e.g. by rewarding managers based on sales, not profits) – thereby pushing out a firm's reaction function – can be advantageous, causing other firm to decrease output.

They show that a similar mechanism works when a cooperative competes with an IOF. The cooperative's organisational form acts as commitment device for pushing the cooperative's reaction function outwards, resulting in the profit-maximising IOF producing less and enjoying a lower profit, while the cooperative makes a higher total profit. It also means that the cooperative's market share is greater than it would have been had it maximised members' total profit. Albaek and Schultz predict a prisoner's dilemma. In their model farmers would make more profit per head in a market with only profit-maximising IOFs. But since a cooperative can increase its profit at an IOF's expense, the best response of both firms is to be a cooperative.

This prediction conflicts with that of Hendrikse (1998), however, who develops a model in which both firms in a duopoly would benefit by being cooperative, but the incentive for each under their prisoner's dilemma is to instead choose to be an IOF, leading to a welfare reducing equilibrium. In his model organisations must try to distinguish between profitable and unprofitable investment projects but only has access to a noisy variable about a project's true profitability. Cooperatives are modelled as having a two decision units (a board, and general assembly of members) whereas IOFs are modelled with only one (the board). If each decision unit independently assesses project

worth, this implies that IOFs will be relatively good at accepting good projects, and cooperatives will be relatively good at rejecting bad ones. He then derives conditions in which an IOF, cooperative, or mixture of the two, is optimal in a duopoly, based on this assumed difference between cooperatives and IOFs in screening good and bad projects.

Hendrikse shows that there are conditions under which a duopoly including a cooperative improves the performance of the IOF, consistent with the competitive yardstick hypothesis, and argues this to justify continuing policy preferences for cooperatives. He also argues that public policy may be used to alleviate the IOF-leaning prisoner's dilemma. For example, taxes or subsidies could conceivably be used to change the payoffs from firms' strategic organisational choices to ensure they coordinate around the cooperative form. Finally, like Tennbakk (1995), Hendrikse's model is able to explain the coexistence of cooperatives and IOFs in equilibrium, though Tennbakk's model distinguishes the two types in terms of objective function, while Hendrikse focuses on differences in decision-making processes.

Effect of Cooperative Competition on Innovation

On a different tack, Giannakas and Fulton (2002) develop a model examining the relationship between cooperative competition in an industry and innovation. They develop a model showing that cooperative involvement in R&D, depending on the size of R&D costs, can be welfare enhancing, and hence socially desirable. In particular:

- 1) When innovation costs are relatively low, total R&D is not changed by cooperative presence in a market, but the cooperative's pricing strategy reduces the prices of inputs faced by producers and IOF profits, while increasing cooperative market share and the welfare of all producers (whether cooperative members or not); and
- 2) When innovation costs are relatively high, cooperative involvement can increase the total amount of R&D in the market, with cooperatives spending more than IOFs in a pure oligopoly (with this increased R&D outweighing that displaced due to competition between the cooperative and remaining IOF). With a cooperative choosing its pricing strategy to maximise member welfare, this increased innovation reduces farmers' input prices and increases the welfare of all agricultural producers sufficiently to outweigh an associated reduction in suppliers' profits, raising social welfare.

Other Effects of Cooperatives on Competition

Karantininis and Zago (2001) develop a model predicting that an industry structured with a cooperative and an IOF produces higher profits and output than a pure duopsony with two IOFs – once again at odds with Albaek and Schultz. Consistent with Albaek and Schultz, however, in the

former case the cooperative produces more than the IOF, but individual farmers each supply less to the cooperative than those supplying the IOF.

Cross and Buccola (2004) develop a model that can not only support the competitive yardstick effect, but which also predicts that cooperatives become suboptimal when the weakness in competition that initially spurs cooperative development is resolved. As they put it (p. 1254) “Cooperatives flourish when competition is weak and decline when it is robust.” In particular, when cooperative industries become competitive, the optimal capitalisation for active-member controlled cooperatives is zero, and the probability of bankruptcy high. In these circumstances the risk of bankruptcy is reduced with greater inactive-member control of the cooperative, or by moving toward IOF structures through more NGC-like arrangements.

Effect of Competition on Cooperative Merits

Finally, analysis by Hart and Moore (1998) addresses the opposite question to that above, namely how competition affects the merits of cooperatives vis-à-vis IOFs, in the case of consumer rather than producer cooperatives. They find that outside (i.e. IOF) ownership is first-best under perfect competition, assuming cooperative members cannot realise the full value of their cooperative investment due to poorly specified property rights, but no better than cooperatives when sales are allowed (although they note that cooperatives will not maximise value even under perfect competition). Consumer cooperatives are shielded from the full effects of competition because any economic rents they produce from having lower costs are used by the cooperative to shield members from competitive pressure.

4.2.2 Implications of Mixed Industry Structures for Procurement

As mentioned above, Hoffman and Royer's (1997) summary of the competitive yardstick hypothesis points to cooperatives' breakeven (i.e. service at cost) objective function as the source of cooperatives being able to pay higher prices to their farmer suppliers. This forces IOF competitors to match those higher prices if they wish to maintain their input supplies. However, the model of Karantininis and Zago (2001), also mentioned above, predicts differential impacts for different supplier types. In a mixed oligopoly comprising a cooperative and an IOF, when farmers are heterogeneous in terms of efficiency, the cooperative will tend to attract the less efficient farmers (suggesting possible disadvantage to open membership cooperatives).

In fact, Sexton (1994) argues that cooperatives can be at a further disadvantage relative IOF competitors in procuring input supplies, specifically where they cannot identify or reward high quality production (e.g. due to “equality of treatment” principles). An adverse selection problem arises with only high quality producers supplying the IOF and, echoing Karantininis and Zago, all

low-quality producers supplying the cooperative. Reynolds (1997) argues similarly, developing a model predicting that where cooperatives compete with IOFs for supply by large-scale producers, they can mitigate the impact of IOFs being able to offer more individualised terms to suppliers by offering differential terms in distributing earnings and voting power in proportion to member patronage volume or patronage-generated equity (i.e. adopting more NGC-like characteristics).

Similarly, Seipel and Hefferman (1994) argue for further procurement advantages of IOFs over their cooperative rivals. They observe that 40% or more of processing in most US commodity sectors is controlled by just four firms. Many of these firms process multiple commodities, allowing them to cross-subsidise product categories. This places such IOFs at a distinct advantage in procurement, since cooperatives attempting to match their commodity diversity to enable procurement cross-subsidisation can encounter heterogeneity problems that raise the costs of cooperative ownership.

Conversely, Fulton and Giannakas (2001) argue that some cooperatives face advantages in securing supplier commitment. They observe that large, centralised, multi-purpose cooperatives are facing substantial financial pressures, which they explain in terms of members' perceiving little linkage between the cooperative's and their own success, cross-subsidisations, growing member heterogeneity, and instances where managers and/or particular member interest groups are perceived as having undue influence. Conversely, smaller cooperatives focussing on a core set of activities or on highly integrated activities have been performing relatively well (e.g. NGCs), which they explain in terms of greater member commitment due to greater member homogeneity, better defined property rights, and governance structures that are transparent, responsive, and less subject to capture by management or interest member groups.

Fulton and Giannakas develop a game theoretic model in which consumers exhibit greater commitment to cooperatives than to investor-owned firms, assuming consumer homogeneity. They predict that member commitment is linked to the cooperative's ability to develop a reputation as an effective agent for the members (i.e. as acting on their behalf), and that an inability to do so can lead to a loss of member commitment.

Finally, Hobbs (2001) describes how cooperative Danish pork producers have successfully resolved producer heterogeneity issues that would otherwise trouble the cooperative approach, enabling better servicing of differentiated customers. The Danish pork industry's umbrella body, Danske Slagterier, has developed set production standards for specific markets (e.g. higher slaughter weights for Germany, and animal welfare and food safety requirements for the UK). Additionally, market-specific contracts are also used by Danish pork cooperatives, overcoming the classic "hold-up" problem faced by hog producers investing in market-specific assets to breed animals to particular market specifications. Such contracts, guaranteeing farmers a market

premium for investing to produce for specific markets, reduce the higher costs and risks such farmers incur, even under a cooperative structure.

4.2.3 International Competitiveness of Cooperatives

Schroder et al. (1993) argue that agriculture faces inherent obstacles to globalisation, but that statutory producer boards and agricultural cooperatives (together, producer marketing organisations, or PMOs) face additional such barriers. First, they note that producer control of PMOs makes them somewhat anachronistic in a globalised, customer-focused market, in that marketing-oriented companies start with a customer – not producer – focus. Also such organisations are typically located near the beginning of the agri-food supply chain, and therefore receive much weaker market signals from the consumer than businesses such as the increasingly dominant retailer chains. Global food companies enjoy the advantage of being able to source materials from around the world, which once again is not an advantage enjoyed by typically geographically-based, producer-controlled marketing organisations. Finally, statutory marketing organisations (more so than cooperatives) can become more focused on satisfying legislative requirements and constraints than meeting customer demands. They conclude, however, that these obstacles are not insurmountable.

Seipel and Hefferman (1994) similarly look at the inherent advantages and disadvantages of agricultural cooperatives in a globalised agri-food supply chain. They argue that the increasing concentration of food processing and marketing in the hands of a few trans-national corporations (TNCs) is raising the possibility of market failure for farmers and consumers not just locally – as has often been the case historically – but also possibly on a global scale. However, the capital and human resources needed by cooperatives to provide a competitive yardstick at this level are much greater, as are the risks they face.

Just as the producer focus of PMOs can be anachronistic in consumer-focused competitive environments, so too can international involvement by cooperatives. Cooperatives need to internationalise to compete, but such competition, as developed by IOFs, (p. 11) “is premised on the logic of shifting capital among enterprises and nations based on anticipated rate of return. Such a “light-footed” investment strategy often appears at odds with cooperatives’ founding purposes, which were tied to enhancing services, providing markets, or reducing input costs for a group of members within a specific region and nation.” Indeed, this regional and national focus can be tightened further where cooperatives focus on a narrow range of products, and also because their products are tied to the inputs supplied by their owner-patrons.

Siepel and Hefferman summarise the *limitations* on international involvement by cooperatives as:

- 1) Diverse interests of members in regional, multi-commodity cooperatives may present a structural constraint to international involvement, with the resulting heterogeneity of interests leading to controversy and contest.
- 2) Cooperatives often have ties to a domestic resource base - not to mention, specific commodity (and sometimes, social group) - including capital plant, which may result in conflicts if a cooperative internationalises and devalues the value of its members' assets (e.g. through enhancing markets for competitors).
- 3) The high-risk and long-term nature of international investment does not sit well with the property rights limitations associated with cooperatives, particularly traditional cooperatives (e.g. portfolio problem, horizon problem).

On the other hand, cooperative *advantages* in international involvement include:

- 1) Cooperatives are often perceived as reliable, quality suppliers, making foreign end-users more inclined to form alliances with cooperatives to ensure supply security (after all, farmers are unlikely to quickly exit the industry, hence they have an incentive to invest in reputation).
- 2) Cooperatives are often seen as highly ethical and trustworthy business partners by business entities in other countries (once again, reflecting the value of investing in reputation in the context of repeated interactions).
- 3) Cooperatives can be well-placed to fill emerging international niche markets, for example, representing an alternative form of food distribution system better able to credibly satisfy consumer concerns regarding food safety, environmental standards and animal welfare.
- 4) Federated cooperatives, in which smaller cooperatives gain scale while preserving farmer ownership and control, with some trade off of coordination and incentives, may well represent a competitively viable global model.

Similarly, based on survey data from 31 US agricultural processing/marketing cooperatives Buccola et al. (2001) argue that cooperatives face disadvantages in investing or selling directly abroad, although with some tempering considerations. Significant among these disadvantages are cooperative owners' risk aversion, since international ventures increase farmers' exposure to an already relatively undiversified investment. Cooperative financing methods, such as capital retains, were also found to contribute to the risk of overseas ventures. On the other hand, like IOFs, cooperatives appeared to be making the type of risky investments required to develop overseas

markets, and cooperatives' overseas experience was found to be a factor influencing the extent of their overseas involvement.

Ohlsson (2003) reports that New Zealand's largest dairy cooperative, Fonterra, seeks to augment its strategy of being a low-cost producer of dairy commodities by also being an effective developer of dairy industry partnerships in selected markets. Examples of this include an alliance with Nestle in North, Central and South America, and joint ventures with Arla Foods in Great Britain and Dairy Farmers of America. The evidence of Desai et al. (2003), that US multinationals are now strongly inclined to adopt outright ownership where they previously were content with strategic alliances, perhaps hints at growing limits to the effectiveness of such a strategy.

Finally, Hobbs (2001) argues that the Danish pork industry should be at a considerable competitive disadvantage relative to its major export competitors. Land is scarce and relatively costly, farm sizes are limited due to environmental regulation, the European Union's Common Agricultural Policy (CAP) inflates feed prices, labour costs are relatively high (e.g. two to three times those in Canada) and it is distant from the important Japanese pork export market. Yet the Danish industry exports 80% of production, and accounts for 25 – 30% of global pork exports, enjoying an almost 30% market share in Japan by volume (and more than that by value since it exports high-value products to that market). Hobbs explains this success in terms of the industry's close coordination provided by its cooperative structure (see the box below for a case study).

Box 4.1 – Hobbs (2001) Case Study of Exporting Success in the Danish Pork Industry

Denmark has a long cooperative history, with its first dairy cooperative established in 1882. Today slaughterhouses account for 44% of the cooperative sector, followed by dairy (28%), and farm supply (15%). Insurance (7%), gasoline and fuel (2%), and other activities comprise the balance. All agricultural cooperatives belong to the Federation of Danish Cooperatives.

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This success is explained in terms of the industry's close coordination provided by its cooperative structure, being centred around three farmer cooperatives which together slaughter 89% of pork production (one, Danish Crown, accounts for 78% of cooperative slaughtering). Average farm size has increased as farm numbers have declined over the past two decades, while total hog production has steadily increased, and hog processors have declined from 50 cooperative slaughterhouses in 1970 to the current three.

This close horizontal and vertical coordination encompasses supply chain activities from breeding and genetics, production, slaughter, processing, further processing and exporting, enhancing information flows through each. An industry umbrella body, Danske

Slagterier, has played a pivotal role in coordinating research and formulating industry-wide strategies. These strategies include the voluntary eradication of salmonella from the Danish pig herd, the voluntary ban on the use of artificial growth promoters, and barcode labelling enabling consumers to trace farm of origin, animal welfare, environmental practices, etc. Together these coordinating institutions reduce transaction costs, enhance product quality, enable products to be tailored to specific markets, and help the industry respond to changing market circumstances. Danske Slagterier's initiatives, coming from a recognised, industry-wide body, also add "credence attributes" to Danish pork products that export customers rely on and which reduce the need for monitoring activities by those customers. Individual producers can build on their own additional quality standards to meet the needs of specific buyers.

Danske Slagterier has developed set production standards for specific markets (e.g. higher slaughter weights for Germany, and animal welfare and food safety requirements for the UK). Additionally, market-specific contracts are also used by Danish pork cooperatives, overcoming the classic "hold-up" problem faced by hog producers investing in market-specific assets to breed animals to particular market specifications. Such contracts, guaranteeing farmers a market premium for investing to produce for specific markets, reduce the higher costs and risks such farmers incur, even under a cooperative structure.

Hobbs (2001, p. x) concludes: "The Danish pork industry offers an example of how the private sector, through the operation of an industry-led co-ordinating body, can offer a flexible, efficient, and credible alternative to legislative control of food safety and quality assurance issues."

4.2.4 Summary – Competition and Competitiveness

The main messages regarding cooperative competition and competitiveness that emerge from the above survey are:

- 1) The cooperative competitive yardstick hypothesis enjoys some empirical support, suggesting that the existence of a cooperative in an imperfectly competitive industry can be pro-competitive.
- 2) While this beneficial effect also extends from farmer-first handler situations to differentiated consumer product markets, it is not to be universally expected, with open membership often shown to be necessary for cooperative presence in a mixed oligopoly to be pro-competitive.
- 3) The ability of cooperatives to raise prices by restricting output, particularly where cooperative membership is open, is constrained by their inability to control member (and non-member farmer) supply decisions. In fact this feature also provides cooperatives with a competitive advantage relative to IOFs, in that they can credibly commit to oversupply, forcing IOFs to reduce output.
- 4) The welfare effects of mixed duopolies comprising a cooperative and IOF are not uniform. In some cases a prisoner's dilemma emerges in which each industry member's best response is to adopt a cooperative form, while they would both be better off adopting the IOF form. In other cases the reverse is true. The presence of a cooperative in a mixed duopoly is predicted to increase innovation in that industry.
- 5) Conversely, in terms of price and quality choices the IOF form is predicted to be superior to the cooperative form where an industry is competitive, although not always.
- 6) Cooperatives are predicted to suffer disadvantages relative to IOFs in situations of competitive procurement, particularly where farmers are heterogeneous (although the Danish pork industry offers a solution in this case), but also where they compete with multi-product IOFs.
- 7) Cooperatives suffer unique disadvantages when competing in a globalised context, but also certain advantages, both reflecting their particular organisational character.

4.3 Product Differentiation, Value-Added and Innovation

As globalisation of the agri-food industry places greater demands on agricultural producers to provide more differentiated products (e.g. either in terms of inherent type/quality, or food safety/GE-free status, animal welfare and/or environmental sustainability), it is natural to ask whether cooperatives offer any advantages or disadvantages in meeting these demands. A key question is whether traditional agricultural cooperatives can move beyond the provision of undifferentiated, low-value added agricultural commodities into more high-value added and differentiated food products. This section surveys research on the role of cooperatives in product differentiation, value-added/quality choice, and innovation.

4.3.1 Product Differentiation

Hayes et al. (2004) present four case studies of farmer-owned brands (FOBs) in the EU and US to identify features contributing to the successful development of such brands. They emphasise the importance of farmers being able to restrict the supply of any successful brand, such as basing brands on some fixed attribute (such as product locale), limiting membership of the producer group (as in NGCs), imposing strict production and/or quality standards, or using some ingredient or process to which the producer group can control access. In one of their case studies such measures are shown to run foul of anti-trust regulations.

To illustrate the benefits of an effective brand, Reynolds et al. (2004) examine the benefits of Fair Trade coffee networks on seven Latin American coffee producing cooperatives. The Fair Trade movement grew out of various European initiatives seeking to alleviate poverty in the global South. It has rapidly grown over the past 15 years, with three Fair Trade labels introduced in Europe and extended to the US, Canada and Japan, harmonised under the Fairtrade Labelling Organizations International. These authors argue that fair trade coffee networks, linking Southern growers with Northern buyers, provide growers with a range of economic and social benefits, including a coffee price more than twice the world price, and increased cooperative credibility with banks, governments and members.

Janzen and Wilson (2002) investigate the marketing of specialty and identity preserved grains in the US. Grain marketing strategies have become increasingly important given consumer- and processor-driven demand, and interest in non-GE products. Key factors in the successful marketing of specialty and identity preserved grains were found to include effective market development, information systems to support traceability at all levels of the supply chain, and contracting to provide producers of specialty grains with some assurance of a market (cf similar mechanisms used for specialty products in the Danish pork industry noted by Hobbs (2001)). Cooperatives and producer alliances were found to have a key strength in this regard, as they

have more direct access and influence over their members and producers. Traditional cooperatives have been moving to adapt to the need for greater specialty and identity-preserved grains marketing. NGCs and producer alliances have also been organised to achieve the required investments in quality and coordination.

An example of such a producer alliance, AgGuild of Illinois, is discussed in Whitacre and Winter (2004). AgGuild is an affiliation of 50 grain producers involving the negotiation of contractual agreements with product users, providing protocols for maintaining quality standards, and information gathering and sharing. It attempts to capture a premium over the general commodity grain price by producing viable quantities of crops meeting the quality and attribute specifications of contracting users. Producer affiliations are offered as a successful alternative to NGCs – another strategy increasingly employed by agricultural producers to capture some of the downstream value of their products – and one requiring less capital outlay and risk: an NGC “without the bricks and mortar.”

Hobbs (2001) explains the exporting success of the Danish pork industry, despite apparent competitive disadvantages, in terms of the industry’s close coordination provided by its cooperative structure. This close horizontal and vertical coordination encompasses supply chain activities from breeding and genetics, production, slaughter, processing, further processing and exporting, enhancing information flows through each. Industry-wide strategies include the voluntary eradication of salmonella from the Danish pig herd, the voluntary ban on the use of artificial growth promoters, and barcode labelling enabling consumers to trace farm of origin, animal welfare, environmental practices, etc. Coordinating institutions reduce transaction costs, enhance product quality, enable products to be tailored to specific markets, and help the industry respond to changing market circumstances. Initiatives of the industry’s coordinating body, Danske Slagterier’s, coming from a recognised, industry-wide body, also add “credence attributes” to Danish pork products that export customers rely on and which reduce the need for monitoring activities by those customers. Individual producers can build on their own additional quality standards to meet the needs of specific buyers.

Furthermore Danske Slagterier has developed set production standards for specific markets (e.g. higher slaughter weights for Germany, and animal welfare and food safety requirements for the UK). Additionally, market-specific contracts are also used by Danish pork cooperatives, overcoming the classic “hold-up” problem faced by hog producers investing in market-specific assets to breed animals to particular market specifications. Such contracts, guaranteeing farmers a market premium for investing to produce for specific markets, reduce the higher costs and risks such farmers incur, even under a cooperative structure. Hobbs concludes (p. x): “The Danish pork industry offers an example of how the private sector, through the operation of an industry-led co-ordinating body, can offer a flexible, efficient, and credible alternative to legislative control of food safety and quality assurance issues.”

Finally, Miranowski et al. (2004) compare IOF and cooperative product differentiation and segregation of non-GE and specialty corn and soybean crops in Iowa using 2003 survey data. While they did not test any specific hypotheses, they find that cooperatives tend to have a higher probability than IOFs of handling specialty crops, and on average, of handling a higher volume of such products. However, the volume of specialty crops handled by cooperatives accounted for less of their total volumes than they did for IOFs. They leave for future investigation the question of whether cooperatives or IOFs enjoy cost advantages over the other in terms of the added handling and transaction costs incurred in dealing with specialty crops.

4.3.2 Value-Added and Quality Choice

Cook (1995) notes that US agricultural cooperatives are not dominant in the R&D-intensive seed sector. The 100 largest agricultural marketing cooperatives in 1991 accounted for just 7% of the value of all shipments, and only 3.6% of value added, indicating that such cooperatives tended to operate in low value-added, first-stage food manufacturing industries. Despite this, the importance of cooperatives in helping farmers to participate in downstream value-added activities is widely acknowledged (e.g. Canadian Minister's Advisory Committee on Co-operatives (2002)).

Furthermore, Nilsson (1997a) notes the rise of vertically integrated, market-driven, value-added focused NGCs in the US, and discusses the success of such NGCs in contributing to a revitalisation of the Great Plains communities and economies. Using production contracts, and delivery rights and obligations, to streamline all business functions, the first such NGC was created in South Dakota, and the model has since been exported. More than 50 NGCs were created in just a few years, investing around US\$1 billion by 1994, spawning what came to be called "co-op fever." Donoso et al. (2003) note the use of alternative new cooperative models to help farmers to participate in downstream value-added. These involve larger cooperatives which remain involved in collection and first-stage processing, but with subsequent processing occurring through partly-owned subsidiaries (e.g. as in Ireland and the UK).

Herbst and Pruffer (2005) formalise the general ownership framework of Hansmann (1996) to examine the role of organisational form on the provision of quality. Non-profits, cooperatives and IOFs are predicted to provide different price-quality combinations. Non-profits are found to serve as a means to commit to the production of high quality due to the lack of alternative use for their profits. Cooperatives are the optimal organisational form in some cases, such as when the costs of collective decision-making are sufficiently low (e.g. when cooperative members are sufficiently homogeneous). Conversely, IOFs are optimal if the costs of collective decision-making make cooperatives infeasible, and if the costs of inducing a manager to increase quality are high. They predict that:

- 1) Cooperatives will prevail where an organisation's owners have an interest in consuming its output and the costs of collective decision-making are low; and
- 2) The quality produced by an organisation is higher, the higher the share of buyers in that organisation's owners, and the lower the share of profits in those owners' total payoffs.

Hoffmann (2002) examines how ownership structure affects quality choice in a mixed duopoly framework comprising coexisting IOFs and/or cooperatives. He finds that each type of organisation produces higher quality in different conditions. IOFs produce higher quality at lower prices and generate a larger consumer surplus than cooperatives when the cost of quality at farm level is fixed (with respect to the level of quality and quantity produced). This arises because only cooperatives consider these costs in this case. Conversely, where the farm level cost of quality is variable, the cooperative has a cost advantage, as the IOF processor has to pay farm-level marginal cost for all its farm inputs. Furthermore, in this case cooperatives generate higher levels and larger quantities of the high quality good at lower prices, producing higher profits and a larger market share of that good. They also generate larger consumer surplus and higher total welfare than IOFs in this case.

Zeuli and King (2004) extend the usual consideration of factors underlying farmers' choice of agricultural contracts (over spot contracting) to include the influence of organisational structure of their counterparty: traditional cooperative, NGC or IOF. They develop a one-period model (hence ignore inter-year price variability) with heterogeneous suppliers differentiated by farm supply and risk-aversion. They find that NGCs may be the only viable organisational form where value-added processing is only marginally viable, and hence where it may not be feasible for an IOF to invest.

Winfree and McCluskey (2005) investigate the association between collective reputation (where quality is not traceable to specific firms in a producer group) and product quality, as might arise in the case of specialty, regional or local food products. They develop a game-theoretic model showing that where collective reputation is based on past average quality, as the number of firms in the producer group increases the incentives to provide quality decreases. They offer minimum quality standards, or producer group strategies to punish supplier firms failing to meet quality requirements, as methods to elicit optimal quality choices. By implication, cooperatives can thus be an alternative to quality regulation, where they have the means and incentive to themselves monitor the quality of their supplies and sanction suppliers who skimp on quality.

Jermolowicz (1999) notes a practice, unique to cooperatives, with a bearing on the ability of cooperatives to control supply quality. Cooperatives often engage in "pooling" whereby producers are paid an average price received by the cooperative for all product of a like quality during the duration of the pool. Individual suppliers receive a volume-based pro rata share of income from the

pool, with adjustments for quality differences. While such arrangements enhance the cooperative's marketing leverage and help to spread individual producers' marketing risk, they require individual producers to forego marketing control to the cooperative. This is likely to function more effectively where producers are homogeneous, but encounter tensions where they produce significantly differentiated produce (in terms of quality or type). The durability of pooling will come under pressure as consumer demands for product traceability increase.

Ohlsson (2003) examines how New Zealand's dairy cooperatives have adjusted their market strategies and organisational structures as a result of changing market characteristics. She notes that New Zealand's largest dairy cooperative Fonterra, and smaller cooperative Westland, maintain a focus on being a low-cost producer of dairy commodities. However, both have made investments in value-added products. Indeed, among Fonterra's seven strategic themes, first is to be (p. 26) "the lowest cost supplier of commodity dairy products", but also "leading specialty milk components innovator and solutions provider" and "leading consumer nutritional milks marketer." Another strategic theme is to be an "effective developer of dairy industry partnerships in selected markets." Examples of this include an alliance with Nestle in North, Central and South America, and joint ventures with Arla Foods in Great Britain and Dairy Farmers of America. Conversely, dairy cooperative Tatua is the most specialised of the three, producing consumer products and value-added ingredients. It is also the most individualised and NGC-like, with practically closed membership, tradable shares, and voting rights and capital contributions linked to delivery rights (and like Westland, is geographically limited).

Finally, Clement (2003) discusses the importance of secure property rights and cooperation for product quality and value-added in New Zealand fisheries. He offers the Orange Roughy Management Company (ORMC), formed in 1991 by a consortium of orange roughy and oreo dory quota-owners, as an example of a cooperative venture to maximise the value of the deepwater fisheries through sustainable management. It represents 99% of such quota-owners. Secure fishing property rights (Individual Transferable Quota, ITQ) have provided the incentive for more efficient operators to invest in additional quota, new vessels, improved harvesting and processing capabilities, and market development. Also, security of resource access through ITQs has resulted in a move away from bulk fishing during spawning seasons to fishing for small catches all-year-round, improving both fish quality and supply continuity. Processing aboard modern factory trawlers has also enabled frozen-at-sea, consumer-ready products. Marketing advantages have been gained with customers due to improving the long-term sustainability of the fishery.

4.3.3 Innovation

As reported in Section 4.2.1, Giannakas and Fulton (2003) develop a model examining the relationship between cooperative competition in an industry and innovation. Their modelling

predicts that at worst, when innovation costs are relatively low, total R&D is not changed and producers' welfare is enhanced by cooperative presence in a market. Conversely, when innovation costs are relatively high, cooperative involvement can increase the total amount of R&D in the market, and the welfare of all agricultural producers. Key to their conclusion is the difference between IOF and cooperative objective functions they assume. Whereas an IOF maximises total profits, a cooperative is assumed to maximise total member surplus. Because of this difference the cooperative faces a greater incentive to innovate because it internalises the effects of reduced costs and prices (due to process innovation) on member welfare.

4.3.4 Summary – Product Differentiation, Value-Added and Innovation

The main themes emerging from this survey of literature on cooperative involvement in product differentiation, value-added/quality choice and innovation are:

- 1) Despite their undifferentiated, low-value added commodity origins, there is evidence of agricultural cooperatives either adapting their strategies within existing cooperative forms to provide greater value-added and/or differentiated products, or their organisational form (e.g. by adopting NGC-like characteristics) where existing forms do not facilitate the necessary changes. Indeed, in some circumstances only NGCs are predicted to be viable organisational forms where value-added activities are marginal for IOFs.
- 2) With respect to product traceability, cooperatives and producer alliances are found to have advantages over other organisational forms, given their direct access to and possibly greater influence over members and producers. The cooperative practice of pooling is likely to face pressure in the light of increased needs for product traceability.
- 3) Evidence exists of cooperatives being more likely to be involved in handling specialty produce than IOFs.
- 4) Cooperatives are theoretically predicted to provide higher quality levels and consumer welfare than IOFs, for example where the costs of collective decision-making are low, or when the farm-level cost of quality is variable.
- 5) The presence of a cooperative in a mixed duopoly is predicted to increase producer welfare, and either preserve or increase the rate of innovation.
- 6) There is evidence of New Zealand cooperatives adopting various types of organisational and strategic measures to participate in increased value-added processing and to enhance product quality.

4.4 Governance

In Section 3 we introduced the argument that limitations on cooperative property rights that are not shared with IOFs make cooperatives vulnerable to principal-agent conflicts, and increased costs of collective decision-making relative to IOFs. Cook (1995) points to free-rider, horizon, portfolio, control, and influence cost problems, all of which can be worse to some degree than in IOFs. On the other hand, Hansmann (1996) and others point to features peculiar to cooperatives that in fact resolve certain governance issues better than can IOFs. Here we survey some of the theoretical and empirical results touching on the relative efficacy of cooperatives and IOFs on various governance dimensions.

4.4.1 Agency Cost Problems

Evidence of Agency Costs

Porter and Scully (1997) compare the relative cost efficiency of a sample of US cooperative and IOF dairy processors in 1972, assuming no monopsony market power in processing. They found cooperative processors to be only 75.5% as productively efficient as IOF processors, attributing the main source of inefficiency to the structure of cooperative property rights. They concede, however, that vertical integration into processing by cooperatives where there is monopsony market power can result in improved efficiency.

Russo et al. (1999) examine the effect of managerial power on cooperative leverage using a sample of 521 Italian agricultural cooperatives. They note excess leverage in Italian agricultural cooperatives, with 48% of 2,322 such cooperatives having an equity/asset ratio of less than 10%, and other research showing cooperatives to have less equity than investor-owned firms (equity/fixed assets of 40%, versus 70%). The associated financial distress reduces cooperative efficiency, increasing transaction costs and missed profit opportunities, and also limits cooperatives' ability to respond to global demands.

Under the principal-agent model, if cooperative members cannot monitor or otherwise control management, then managers have an incentive to behave opportunistically by pursuing their own goals rather than their members'. Given many Italian cooperative managers are on fixed salaries not related to performance, Russo et al. predict they will support risk-minimising strategies. Thus, if such managers influence capital structure through their bargaining power, the expected average equity/asset ratio should be higher, more sensitive to risk, and less sensitive to cooperative profitability and financing costs.

In fact they find capital structures of cooperatives with powerful managers to significantly differ from those where managers are non-powerful, and to respond in different directions to increases in profitability (increasing equity ratios for the former; decreasing for the latter). Leverage was higher for cooperatives with non-powerful managers than for those with powerful managers, with 69% of the non-powerful manager cooperatives having an equity ratio of less than 10%, versus only 40% for the others. Average equity ratios for these two classes of cooperative were 10% and 19% respectively.

While these differences in capital structure support the hypothesis of agency conflicts for some cooperatives, the authors argue that those with more powerful managers are better placed to compete internationally in changing global food markets due to weaker capital constraint (i.e. less financial distress). They note the dilemma this creates – members prefer to minimise their capital commitments to cooperatives, but where powerful managers influence higher equity ratios this enhances competitiveness.

Katz (1997) empirically examines the influence of competitive strategy on productivity for cooperatives and investor-owned firms in 14 sub-sectors of the US food products industry over 1988 – 1992, using an agency theory and property rights framework. He finds that cooperatives with higher productivity tend to resist diversifying growth strategies, maintain higher liquidity (to avoid bankruptcy) and limit technology-related expenditures. Members cannot easily diversify their cooperative ownership and so demonstrate risk-aversion.

Conversely, owner-influenced investor-owned firms with higher productivity were smaller, diversified into unrelated markets, had lower liquidity, and paid their chief executives more for performance. Manager-controlled investor-owned firms – those with no single shareholder owning more than 5% of the firm's equity – with higher productivity tended to be smaller, avoided unrelated diversification, and had higher liquidity. He concludes that these results confirm the importance of agency costs in determining competitive strategy and influencing productivity.

Keeling and Carter (2004) examine the failure in 2000 of an 80-year old Californian rice cooperative, Rice Growers Association (RGA), from an agency cost perspective. Based on survey responses they found that RGA members thought it failed due to poor management, including a decision to pursue product differentiation, and an inability to contain costs. RGA's board was regarded as passive and ill-equipped to scrutinise management decisions, and management skills were not well-regarded, with management failing to evaluate complex business decisions and being remiss in planning for future contingencies. Despite these governance flaws, members did not actively involve themselves in running RGA, highlighting free-rider problems at both member and board levels (which were also indicated by management complaints at a lack of member feedback).

Resolving Agency Costs

Trechter et al. (1997) cite a 1993 US survey finding that managerial bonuses in cooperatives were more closely tied to firm size than performance, with ex post bonuses preferred to those set ex ante. They also cite a 1994 survey finding that ex ante bonuses are more likely to be associated with profits, while ex post bonuses were more likely to be based on sales.

Drawing on case studies they find that cooperative boards are sceptical of ex ante bonuses for reasons including difficulty in defining appropriate variables to tie bonuses to, problems in distinguishing managerial performance and exogenous effects, and inexperience with this type of compensation. They also find that the principal agent problem in cooperatives is primarily dealt with in two ways. First, by frequent interaction between the cooperative board and manager, particularly for long-serving managers. Second, because the cooperatives studied make most of their sales to members, managerial performance is directly assessed by members in most transactions. Trechter et al. conclude that cooperatives do not tend to solve the principal agent problem via high-powered financial incentive schemes (as is more common in IOFs), but by continual oversight by cooperative boards and members.

This conclusion squares with the findings of Peterson and Anderson (1996), based on their survey of cooperative strategies identified in a survey of 21 US cooperatives. Despite the theoretical argument for cooperatives to be formed to reduce agency costs by achieving economies in monitoring managers and strategies, survey respondents did not indicate this strategy was pursued in practice. In fact their survey provided mixed signals about agency cost issues. More than half (52%) of cooperative chief executives felt their boards made strategic decisions too slowly and lacked the expertise required for quality decisions. Many managers expressed a sense of “being alone” when it came to making major decisions, and did not find their boards could offer helpful advice in difficult situations. Cooperative boards were seen as giving managers too much latitude on important decisions, and not handling management evaluations effectively, suggesting high agency costs, not low. On the other hand most cooperative chief executives indicated their responsiveness to member needs, and 76% of those surveyed emphasised that members had direct access to them for making complaints and suggestions, and importantly to provide them with feedback and information.

4.4.2 Impact of Member Heterogeneity

The Heterogeneity Problem

Hendrikse (2004) observes the increasing differentiation and need for innovation in the supply side of agricultural and horticultural markets. These arise due to both competition flowing from

globalisation, and because of increasing consumer demands for variety and quality. Both have resulted in governance changes among growers, and between growers and wholesalers. Product and quality differentiation, and differential rates of innovation, create heterogeneity of interest among (horizontally and vertically integrated) cooperative and (horizontally integrated) grower association members. It also strains the equality of treatment principle underlying traditional cooperative structures.

Hart and Moore (1996, 1998) analyse the circumstances in which cooperatives are relatively more or less efficient (in terms of pricing and quality choices) than IOFs, contrasting objective functions and voting mechanisms under each organisational form. Arguing that both IOFs and cooperatives are inefficient forms of organisations but in different ways, they find that outside ownership (i.e. as in IOFs) is superior to cooperative ownership as member heterogeneity rises, with cooperatives being first best only when the median member has average preferences (in which case one-member-one-vote becomes efficient). Also, IOFs are superior to cooperatives as the industry becomes more competitive. Some cooperative problems, such as the horizon problem, can be overcome with transferable cooperative property rights. Also, pricing efficiency is increased when cooperative membership is open.

Like Hansmann (1996), Hart and Moore argue that cooperatives work well when their activities are narrowly defined, but poor at dealing with significant change (when members' interests are more likely to diverge). Interestingly, they predict that traditional cooperatives' use of one-member-one-vote may in fact be the least inefficient voting mechanism (e.g. compared with IOF's one-share-one-vote) due to its clarity and protection against abuse.

Banerjee et al. (2001, p. 139) construe firms as "domains in which disparate interest groups compete over rents, resulting in considerable loss of efficiency", with conflicts exacerbated when there is substantial heterogeneity among firm members. They focus on Indian sugar processing cooperatives, which are meant to pay uniform prices to all growers. In practice, they argue, larger members (who are more powerful within the cooperative) use their power to depress the sugarcane price, generating retained earnings that they then appropriate in pecuniary and non-pecuniary ways (such as through cooperative expenditure on temples, and schools and hospitals, as well as through direct expropriation). They find support for this prediction from a dataset comprising nearly 100 sugar cooperatives in the Indian state of Maharashtra over 1971 – 1993.

Bogetoft and Olesen (2003) cite research criticising cooperatives for too little investment in product and market innovation. They show that members of agricultural marketing cooperatives who produce standard products have conflicting interests with those producing specialty products where farm-level differentiation arises to meet requirements from high-quality market segments. This implies member heterogeneity, and increased influence costs. Since the increased sale of

specialty products increases the bargaining position of the specialty producers, the standard producers are reluctant to promote the sale of specialty products.

Finally, Emmons and Schmid (2002) show that the pricing and dividend policies in open-membership credit cooperatives are affected by both the proportion of customers that are members, and heterogeneity in member preferences. This arises even when there is no business discrimination between members and non-members.

Solutions to the Heterogeneity Problem

Reynolds (1997) uses game-theoretic arguments to model incentives to cooperate in agricultural cooperatives when there are diverse member interests. He examines the role of member consensus and policy consistency in a cooperative, and member consensus and policy in a strategic framework of competition, where competitors offer individualised terms to selective producers that are difficult for a cooperative to match. He concludes that cooperatives can address the problem of losing some of their largest patrons to competitors by distributing earnings and voting power in proportion to member patronage volume, or to patronage-generated equity.

4.4.3 Information, Adversity and Trust

Cooperative Informational Advantages

Bontems and Fulton (2004) argue that cooperatives can have informational and hence cost advantages relative to for-profit firms deriving from their greater alignment of member and firm goals, and depending on the extent of income redistribution among members. They observe that (p. 2) “An important insight obtained from incentive theory is that privately held information is valuable to those that possess it, while it imposes a cost on those that do not.” This suggests that organisations in which the goals of the principal and agent are more closely aligned might have different cost structures than those where they diverge – i.e. their information costs (the costs associated with eliciting the desired behaviour from agents) are lower.

Cooperatives and IOFs represent well-known cases where principals’ and agents’ goals diverge. In agricultural markets, for example, IOF processors wish to maximise profits which involves a conflict with their farmer-suppliers’ objective of maximising farm-gate returns. Conversely, an agricultural marketing cooperative typically seeks to maximise service at a price, or maximise member welfare, representing a closer alignment between principal and agent goals. Thus cooperatives should have an organisational advantage where privately held information is important (e.g. by farmers regarding their output quality). Hence, all else equal, cooperatives should have lower production costs. These authors develop a model demonstrating this result.

Under complete information cooperatives and IOFs are equally first-best. Under incomplete information, however, cooperatives always induce output closer to first-best than do IOFs.

Cooperative Financing Advantages in “Bad Times”

Hueth et al. (2005) develop a model explaining cooperative formation in “hard times” due to improved farmer/processor incentives outweighing deadweight governance costs, thereby facilitating financing not otherwise available. They observe that cooperatives are often formed in declining industries, or alternatively, that cooperatives seem to be sustainable in relatively low-return environments that do not support IOFs. This suggests an apparent advantage of the cooperative firm.

These authors argue that cooperative formation is a costly mechanism for increasing the power of farmers’ incentives. While cooperative formation gives rise to advantages in terms of mutual monitoring and reduced supervisory expenses, by farmers pledging farm assets to acquire production facilities it also increases the amount available to pay to lenders (“pledgeable income”), enabling greater funding access for processing. Such advantages must be weighed against any inherent inefficiency in the cooperative governance structure (due to internal decision-making frictions arising from illiquid ownership that are not present in IOFs), and any deadweight costs associated with the loss of asset-specific human capital in the event that the firm fails.

Thus cooperative formation, being a mechanism for relaxing the limited liability constraint, is predicted to be an efficient response when there is otherwise insufficient pledgeable income, arising for example when market returns are low, or lending rates are high. They thus predict that a cooperative firm is financially viable in a larger class of environments than an IOF (but that the latter dominates when both are feasible). Consistent with their model’s predictions, using data for 15 agricultural commodity sectors in the US over 1930 – 2002, they find a positive causal relationship between annual real lending rates and the level of cooperative activity. In contrast to the prevailing view on cooperatives – that they suffer from a lack of access to external capital – their analysis suggest that a lack of external capital is required to elicit internal financing from cooperative members, which can then be considered a key advantage of the cooperative firm.

Role of Trust in Cooperatives

Hansen et al. (2002, p. 42) define trust to be “the extent to which one believes that others will not act to exploit one’s vulnerabilities.” They observe that most cooperatives seek to build trust among their membership and management teams, and many include trust among their guiding principles in mission statements. They also note the importance of trust in economic exchange – e.g. empirically trust has been found to reduce transaction costs by avoiding costly negotiations and

contracting, and may also enhance alliance revenues by facilitating a more complete interaction of alliance partners' resources.

Hansen et al. argue that cooperatives tend to couple complex services with greater geographical dispersion, and less complex services with less dispersion. They suggest this flows from scale economies, with highly complex services requiring specialised skills that are scalable over larger areas. Based on a survey of a simple grain marketing cooperative and a more complex cotton marketing cooperative (both in the US), they argue that the trust developed among members and between members and management will vary depending on the complexity of the cooperative's services and its geographic dispersion. In cooperatives with complex services and geographic dispersion trust between members and management is most important, since members need to evaluate the extent to which management can add value through their services, and trust is more cognitive (based on facts) than affective (based on feelings). Conversely, for cooperatives offering less complex services and which are less dispersed, inter-member trust is more important, helping to meet members' social goals (which are argued to matter more in such contexts, in addition to economic goals), and affective trust is predominant.

Again looking at the importance of trust, James and Sykuta (2004) examine the choice of organisation (IOF or cooperative) to which Missouri corn and soybean farmers marketed their 2002 crop year harvest, based on a survey of 2,000 producers. They find their results puzzling, in that farmers marketing soybeans place significantly higher trust in producer-owned firms than in IOFs, and that trust is a significant factor affecting the decision of such farmers to market their grain to a producer-owned firm, all other things equal. However, for corn farmers trust is not different between the two firm types. They suggest this could be due to the fact that while two thirds of corn farmers also grow soybeans, almost all soybean farmers grow corn, implying that the choice of marketing organisation for soybeans may also affect that for corn. Alternatively, corn producers are more likely to diversify their crop products, perhaps indicating higher risk aversion or higher perceived uncertainty, noting that uncertainty and vulnerability are core elements of trust-based relations.

4.4.4 Summary – Governance

The main messages regarding cooperative governance that emerge from the above survey are:

- 1) Evidence exists for agency costs arising under cooperative ownership, which of itself does not distinguish cooperatives from IOFs (since IOFs also suffer from such costs), and there is some suggestion (Russo et al. (1999)) that the expression of these costs – lower leverage – may in fact enhance cooperatives' competitive ability.

- 2) Cooperatives differ from IOFs in terms of their solutions to agency costs, using closer monitoring in place of high-powered incentives (which are more common in IOFs, especially when they have listed shares).
- 3) Evidence also exists in support of common theoretical predictions that increases in member heterogeneity in cooperatives increases inter-member conflicts and hence the costs of cooperative ownership. Conversely, cooperative strategies to reduce member heterogeneity can result in other adverse consequences, such as reduced product and market innovation.
- 4) Some inter-member conflicts can be reduced where cooperatives deviate from the traditional cooperative model and tie earning and voting power to patronage, or to patronage-generated equity.
- 5) Closer alignment of supplier and firm goals under cooperative ownership can provide cooperatives with an informational and hence cost advantage over IOFs where suppliers have private information.
- 6) Cooperatives can be more efficient than IOFs in “hard times” due to farmer ownership, relaxing the organisation’s limited liability constraint and enabling better access to capital.
- 7) Inter-member and member/manager trust plays differing roles depending on cooperative type, and it is not clear that cooperatives enjoy greater trust from their suppliers than do IOFs.

4.5 Access to Capital, Investment, and Growth

A key question when comparing cooperatives with alternative organisational forms is whether they have the capacity to finance growth and investment necessary for their survival in an increasingly globalised and hence competitive agri-food chain. Theoretical arguments suggest cooperatives are capital constrained (although see the Heuth et al. (2005) discussion in Section 4.4.3), and that this is an inherent obstacle to their growth and competitiveness. It also raises their risk of failure. This section surveys evidence on each of these questions.

4.5.1 Access to Capital

Chaddad and Heckelei (2003) compare the investment behaviour of agricultural cooperatives and IOFs in the US food industry, in particular examining the role of financial constraints by exploring whether ownership structure affects investment sensitivity to cash flow. They note that many scholars regard agricultural cooperatives' imperfect access to capital as their "Achilles' heel" in an increasingly concentrated and tightly coordinated agri-food chain. Thus cooperatives may lack the capital resources to grow and to remain a viable organisational form.

They summarise the main theoretical arguments for cooperatives facing capital constraints as:

- 1) Cooperative residual claims are restricted to active owner-patrons;
- 2) Cooperative members lack investment incentives due to vaguely defined cooperative property rights (giving rise to the free rider, portfolio and horizon problems discussed in Section 2.4.2);
- 3) Cooperatives must rely on internally-generated capital as they have limited access to external funds; and
- 4) Cooperative equity is often not permanent (e.g. where it is subject to redemption at "fair value" when owner-patrons retire).

Noting that previous empirical evidence on the capital constraint hypothesis is inconclusive, Chaddad and Heckelei identify two classes of relevant empirical studies: growth studies and direct empirical tests. They provide a test of the latter type, using data on 131 agricultural cooperatives and 227 listed IOFs in the US food industry over 1991 – 2000. Given that IOFs in principle can raise equity capital via the public capital markets by virtue of their unrestricted residual claims (i.e. shares), they predict that cooperatives should have a higher sensitivity of investment to cash flow. Indeed they establish a significant cooperative investment-cash flow sensitivity, concluding that the cooperatives they considered are financially constrained. As a public policy response they

recommend the removal of unspecified regulatory restrictions to organisational change if a policy objective is to mitigate cooperative financial constraints.

In a similar vein, Chaddad and Cook (2002) also argue that existing evidence on the cooperative capital constraint is inconclusive, and directed at the question of cooperative access to capital rather than their demand for investment funds. Applying a similar methodology to Chaddad and Heckelei, but looking only at cooperatives, they test the capital constraint hypothesis using data on 507 US agricultural cooperatives over 1991 – 2000, split into sub-samples based on size, permanent equity and credit risk. They find that cooperative investment responds positively and significantly to both the marginal profitability of capital and cash flow.

All three cooperative sub-samples face binding financial constraints when making investments. However, small cooperatives, cooperatives with relatively high permanent equity and low credit risk cooperatives were relatively less constrained than large, low permanent equity and high credit risk cooperatives. Chaddad and Cook are careful to observe that eliminating restrictions on cooperative residual claims may not be sufficient to relieve the capital constraint, and suggest it is not surprising that cooperatives have been adopting new organisational forms. Indeed, they note that agricultural cooperatives have not tended to convert to IOFs as has occurred with mutual firms in other industries, instead adopting new organisational forms while maintaining farmer ownership and control.

Earlier evidence produced by Lerman and Parliament (1991) in fact contradicts the capital constraint hypothesis. They compare the use of debt in 60 US dairy, food, grain and farm supply cooperatives over 1973 – 1987 with that in US IOFs, finding that cooperative equity financing proportions were indistinguishable from IOF proportions over 1973 – 1983, and consistently higher than the national average over 1984 – 1987. If cooperatives did face capital constraints, this would suggest that they rely more on debt than IOFs, and hence have lower such proportions. Moreover, cooperatives were found to finance nearly half their growth with equity. The finding that cooperatives had lower debt levels than IOFs was confirmed by Hardesty and Salgia (2004), as discussed in Section 4.1.1.

Finally, Kyriakopoulos and van Dijk (1997) present evidence on the use of innovative capital raising techniques by entrepreneurial and market-oriented agricultural cooperatives in the EU. Among developments in cooperative financing they note the use of:

- 1) Subsidiaries and strategic alliances;
- 2) Non-voting, fixed rate debt instruments (bonds) to non-members;
- 3) Proportional tradable shares, tying ownership rights to fixed supply obligations, and allowing cooperative members to trade such rights among themselves;

- 4) External participation shares, which enable non-members to participate either on a non-voting or restricted voting basis; and
- 5) Conversion to publicly listed IOFs (mainly in Ireland).

Aside from normal cooperative membership shares and retained profits, bonds are the next most popular source of funding, with EU cooperatives issuing bonds in eight out of 15 countries. Proportional tradable shares are less widely adopted, occurring in only two out of 15 EU countries.

4.5.2 Investment

Puaha and Tilley (2003) examine factors underlying decisions to either invest or not invest in a new value-added NGC, called VAP Cooperative, formed in Oklahoma in 2000. They note that state legislation had been passed to encourage the formation of NGCs, allowing tax credits on up to 30% of capital invested in such cooperatives. They argue that investments in closed cooperatives such as NGCs are inherently risky. In the case of VAP cooperative, for example, it was a start-up venture, beginning with a small customer base and limited product distribution system, and its single product (pizza dough) faced a highly competitive market. Using survey responses from 298 wheat growers who did not invest in VAP cooperative and 323 who did, they find that social and non-monetary factors played a significant role in members' decision to invest. This is despite VAP Cooperative having NGC features more closely aligning its equity value with market value.

In a related vein, Russo et al. (2000) develop a model showing that cooperatives evaluate investments differently from IOFs due to the unique characteristics of their owner-patrons compared to other investor types. These characteristics raise the transaction costs of the cooperative decision process, making internal coordination among members more complicated. While the investment decisions of IOF investors are modelled according to standard financial theory as depending only on parameters about which in equilibrium they should agree (risk and return), cooperative investors are modelled to base their decisions on additional factors:

- 1) *Factors relating to individual member preferences* – their risk aversion, portfolio composition, and covariance between farm and cooperative returns;
- 2) *Institutional factors affecting cooperative decision-making* – e.g. cooperative voting rules and director election processes; and
- 3) *Distribution of bargaining power across members* – their model shows different members may have different investment project evaluations but may face obstacles in securing compensation by acquiescing to others.

Hence, while IOF investors can be assumed to have a coincidence of interest in project evaluation – caring only about commonly-held, market-determined valuation parameters – divergences in cooperative member interest and associated internal costs of collective decision-making can more clearly arise (particularly where members are heterogeneous). However, these authors emphasise that cooperatives may face lower external transaction costs than IOFs where they are used by farmers to improve vertical coordination and reduce their exposure to opportunistic behaviour (i.e. hold-up).

4.5.3 Growth, and Failure Risk

Fulton et al. (1995) examine whether cooperative growth is constrained, based on a long-term sample of three Canadian and four US large regional agricultural cooperatives over 48 – 60 years. They find cooperative growth is unrelated to cooperative size, and the long-term growth rate for the sample is low, perhaps even zero.

On the question of a flip-side to growth, financial stress, Moller et al. (1996) examine the sources of financial stress in 718 of the largest group of centralised US agricultural cooperatives from 14 states over 1987 – 1992. They note that studies comparing cooperatives and IOFs find little difference between the two organisational types in terms of leverage, liquidity, profitability and efficiency. Their study instead focused on which of three factors, asset return, leverage and interest rates contribute to cooperative financial stress (defined as profitability over a series of years). Around 30% of the cooperatives they examined suffered financial stress in the sample period. Of those cooperatives, financial stress arose due to low earnings in 54% of cases. High interest rates accounted for around 24%, while leverage accounts for the remaining 22%. Smaller cooperatives were also twice as likely to face financial stress as larger ones. They were also more likely to face profitability problems, while larger cooperatives were more likely to face debt and interest rate problems.

Manfredo et al. (2003) suggest that US agricultural cooperatives, particularly smaller regional ones, have been slow to adopt modern risk-management strategies such as futures, options and swaps. Instead they rely on holdings of capital reserves to provide a buffer against profit swings due to adverse market conditions, which is a costly alternative given cooperatives are relatively capital constrained due to an inability to access public equity.

Cross and Buccola (2004) develop a model predicting that cooperatives become suboptimal when the weakness in competition that initially spurs cooperative development is resolved. In particular, when cooperative industries become competitive, the optimal capitalisation for active-member controlled cooperatives is zero, and the probability of bankruptcy high. IOFs are modelled as having a greater interest in the future well-being of the firm than do cooperative members, as the

latter enjoy only time-limited cooperative returns (the horizon problem). Furthermore, in a competitive industry the cooperative no longer serves as a discipline on an IOF processor, so cooperative members only sustain the cooperative to preserve previously-retained member equity. But in this environment the cooperative generates no surpluses, so its members have no interest in whether or not it fails. The authors show that in competitive circumstances the risk of bankruptcy is reduced with greater inactive-member control of the cooperative, or by moving toward IOF structures through more NGC-like arrangements. Each extends the horizon over which cooperative members seek to secure their returns, increasing their cooperative investment and interest in its survival.

Finally, Hogeland et al. (2004) develop a model comparing member expected net present value, and probability of financial ruin, for traditional cooperatives and NGCs, and for IOFs. They affirm the traditional rationale for cooperatives as a means of improving farmers' returns in the face of imperfectly competitive markets. They question this rationale, however, in the light of increasing competitiveness in the US economy, with reduced trade restrictions, freight market deregulation, and enhanced local market contestability through improved preservation and transportation technologies. Maturing capital markets have also eroded traditional cooperative borrowing advantages, and strong equity performance places pressure on non-dividend paying and illiquid cooperative equity.

These authors demonstrate that as markets become increasingly competitive, traditional cooperatives encourage lower investment and give rise to higher bankruptcy probability than IOFs. However, members become more willing to capitalise cooperatives as inactive members – who place greater emphasis on the firm's investment value as opposed to their patronage value – gain influence on the cooperative board, or as the firm's capital structure more closely resembles that of IOFs. NGCs are one way of achieving this, but carry an inherent tension between members' long-run interests as owners, and patronage returns.

4.5.4 Summary – Access to Capital, Investment, and Growth

The main messages regarding cooperative access to capital, investment and growth that emerge from the above survey are:

- 1) Despite theoretical predictions by some to the contrary, both recent and earlier evidence exists for cooperatives having lower debt levels than IOFs.
- 2) However, recent studies do establish that cooperatives are financially constrained. While these constraints are attributed to theoretical problems with cooperative property rights, the elimination of such problems may not be sufficient to resolve these financial constraints.

- 3) These constraints are being addressed by cooperatives adopting variations on the traditional cooperative form, such as NGCs, or by entering into joint ventures and strategic alliances.
- 4) Cooperative members may make investment decisions differently to IOF investors. Non-financial considerations may play a greater role in their investment decisions, and unlike IOF investors, cooperative members are predicted to face higher transaction costs of collective decision-making when deciding on investments. These internal disadvantages relative to IOFs should be tempered by any external benefits cooperatives bring through improved vertical coordination and reduced exposure to opportunism/hold-up.
- 5) Large cooperatives in the US have been shown to experience only low or zero growth rates over long periods. The rise of NGCs since the 1990s, and ongoing cooperative consolidation, may cause these patterns to change.
- 6) Cooperatives may become less viable and at greater risk of failure than IOFs if the markets they operate in become more competitive. However, cooperatives may be more financially viable than IOFs in struggling or declining industries.

4.6 Cooperative Evolution

As discussed in Section 3.1, whether or not the persistence of cooperatives is regarded as desirable or undesirable hinges largely on whether there are inherent or external constraints on the reorganisation of cooperatives. Evidence of active and/or successful cooperative restructuring should provide reassurance that such constraints are not absolute. Where cooperative's inherent features constrain reorganisation this provides direct evidence on the question. Where cooperative reorganisations retaining cooperative features can be shown to provide benefits not shared by those retaining fewer such benefits, this too provides evidence on the desirability of cooperative evolution. We consider evidence on each of these questions below, noting that evidence on cooperative adaptation considered in the preceding sections – such as cooperative responses to relieve capital constraints – is also relevant here.

4.6.1 Nature and Incidence of Cooperative Reorganisations

Demutualisations

Birchall (1998) notes a wave of demutualisations in the 1990s in the UK, US, Australia, South Africa and Canada, particularly in the financial services sector. A wave of conversions of agricultural cooperatives to IOFs in the US, Ireland and Denmark also occurred, and Eastern and central European cooperatives were privatised following the collapse of communism. As subsidised state marketing boards are unwound, he argues, farmers have an incentive to cooperate, as occurred with the formation of farmer cooperative Milk Marque when the British Milk Marketing Board was privatised (but which was subsequently broken into three due to competition concerns).

A declining number of Australian cooperatives are reported in Ernst & Young (2002). Cooperatives continue to have a large presence in the dairy, fruit, and cotton industries. But cooperatives are either consolidating to achieve efficient scale for global competition, or converting to other forms. Dairy company Bonlac, Pivot Fertiliser, and a food company (Ardmona Foods) are recorded as having demutualised. Co-operative Bulk Handling is now the only remaining Australian grain cooperative, with most previously government-owned grain organisations opting for corporate structures when faced with privatisation.

Kerr (1999) lists a number of recent listings and conversions of other agricultural cooperatives, in Australasia and elsewhere. In New Zealand, for example, meat processor AFFCO converted from a cooperative to a listed IOF in 1995. In Australia, PLC Industries, a major egg marketer and feed miller converted to a public company in 1998. Dairy Value, a dairy products group based in South Australia, floated on the Australian Stock Exchange (ASX) in 1995. When the ASX introduced

more flexible listing guidelines in 1997 covering cooperatives and former cooperatives, several listings resulted. First was Farm Pride Foods Ltd (formerly Egg Industry Cooperative Limited), New South Wales grain-handling company Graincorp followed in March 1998, and the former Australian Wheat Board, AWB, listed on the ASX in August 2001.

In other countries, Kerr notes, three major Irish dairy cooperatives lead the way with demutualisation, including the successful creation of Kerry Group, a partially listed, diversified cooperative involved in dairy, pork and beef processing. Kerry Group was formed after a wave of Irish dairy mergers following Ireland's entry into the EC in 1973 (O'Connor and Thompson (2001)). Kerr notes that the two other Irish dairy cooperatives that demutualised enjoyed less success than Kerry Group. Also, US dairy cooperative Land O'Lakes reverted to cooperative ownership after experimenting with listing.

Gill (2002) analyses the financial performance of a well-known former Australian agricultural cooperative, Wesfarmers, which became a listed IOF in 1984. It began as a producer-owned stock and station agent in 1902, but followed a pattern of horizontal diversifications, seeing it acquire interests in hardware, gas, coal, fertilisers and chemicals, and rural services and insurance, to name a few. It restructured itself as a listed IOF to improve its access to equity so as to support the continuation of its growth strategy.

Scrimgeour and Sheppard (1998) provide an economic analysis of deregulation of selected Israeli, South African and Argentinian producer boards. In respect of Israel, changes to the Citrus Marketing Board resulted in a deregulated domestic market and multiple exporters. IOFs benefited at the expense of cooperative firms as a consequence. Bayley (2000) reported a similar decline in South African agricultural cooperatives following 1997 deregulation .

Reorganisations Retaining Cooperative Form

Mooney and Gray (2002) paint a different picture of cooperative reorganisation, examining the incidence and type of US agricultural cooperative restructurings over 1989 – 1998. Of the 314 restructurings in their sample, 36.6% involved alliances, joint ventures, or mergers or acquisitions between cooperatives. 23.2% involved cooperative expansions (i.e. building new facilities), and 16.6% involved cooperatives acquiring IOF assets (more than three times the rate of IOFs acquiring cooperative assets). In 15.3% of cases cooperatives formed joint ventures or alliances with IOFs. Only 4.8% of cases involved full conversion of cooperatives into IOFs, and only 3.5% of cases involved cooperative closure. They thus conclude that the dominant form of agricultural cooperative restructuring in the US occurs within the cooperative sector, rather than involving departures from the cooperative organisational form.

Ohlsson (2003) documents successive waves of dairy cooperative mergers, rather than conversions to IOFs, in New Zealand. In 1935 New Zealand had over 400 cooperatives, but with transportation improvements and advances in large-scale processing technologies this number had more than halved, to 180, by 1960/61, and fallen to just 19 by the beginning of the 1990s. Prior to the deregulation of the NZDB in 2001, subsequent mergers left only two major cooperatives, Kiwi Co-operative Dairies Limited and New Zealand Dairy Group, which subsequently merged to form Fonterra (accounting for around 95% of the industry). Two smaller cooperatives, Tatua and Westland chose to remain independent.

Pritchard (1998) paints a different picture to that of Kerr (1999) of the changing role of agricultural cooperatives in Australia, examining the restructuring of the Australian dairy and wheat sectors in the 1990s. In the Australian dairy sector regulation arose from farmers' attempts to stabilise production during the 1930s recession, paralleling North American experience. State governments regulated "market" (i.e. fresh liquid) milk, with the federal government regulating "manufacturing" milk. This encouraged a production system organised through regional cooperatives as localised vehicles to exploit market conditions embedded in regulation (p. 68): "Changes to milk zone boundaries had their counterpoint in the reorganization of dairy capital through cooperative mergers."

In the mid-1980s public policy shifted towards deregulation, to generate efficiencies and improve national economic performance, resulting in major reorganisations (p. 68): "Between 1983 and 1993 the number of dairy cooperatives was reduced from 44 to 27 and the number of dairy proprietary companies from 65 to 31." Mergers – such as those resulting in the formation of dominant cooperatives Bonlac and Murray Goulburn in Victoria – were prompted by the desire to gain economies of scale in preparation for the deregulation of export marketing arrangements. He concludes (pp 69-70): "In sum, these processes have caused the eclipse of the regional cooperative as the main organizational form of capital in the dairy industry. The industry is now composed of a smaller number of cooperatives and proprietary companies with extensive market reach, tightly organized distribution systems and strategic alliances, and innovative equity structures. ... deregulation has been associated with a restructuring and strengthening of incumbent cooperative capital, rather than an incursion of globally mobile capital."

As for the Australian wheat sector, Pritchard notes that until the late 1980s most growers sold wheat into pools administered by the then statutory marketing authority AWB (the Australian Wheat Board), and enjoyed guaranteed minimum prices underwritten by government. In the 1990s AWB's domestic monopoly was removed, guaranteed minimum prices eliminated and borrowing guarantees were subjected to sunset clauses. Its export monopoly remained under pressure following the Uruguay round of the GATT negotiations, but persists even now (www.awb.com.au). Demand patterns also changed, with emphasis on the bulk sale of wheat to export markets giving way to a greater emphasis on domestic feedgrains (with corresponding investments from US and

Japanese interests seeking to integrate Australian beef production into international supply chains).

He argues that (p. 71): "Growth of the deregulated domestic feedgrains sector has opened the possibility for new marketing arrangements within the industry. To date, these opportunities have been captured mainly by newly established wheat marketing cooperatives and by the AWB, rather than by transnational grains traders. The formation of grower cooperatives in the Australian wheat industry has been an important new phenomenon. The history of statutory marketing arrangements has meant that wheat growers have not possessed traditions of rural cooperation. Between 1990 and 1996, however, seven regionally based grains cooperatives were established in New South Wales, the state in which demand for feedgrains has been strongest."

Thus Pritchard concludes that these case studies suggest the process of agri-food globalisation is being mediated by an ongoing role played by agricultural marketing cooperatives.

Contrasting the AWB and Fonterra Approaches

Finally, Trechter et al. (2003) compares the divergent reform strategies of New Zealand's largest dairy cooperative, Fonterra, with that of the former Australian Wheat Board, AWB, in response to the loss of statutory single seller desks. Fonterra's strategy was to achieve cost savings through integrating the New Zealand dairy supply chain under a cooperative structure, to strengthen its ability to compete globally while maintaining farmer control. It focuses on strong, differentiated brands, creating loyalty and price premiums. It adopted features of new generation cooperatives to lessen horizon and portfolio issues, but continues to face influence costs from inter-farmer conflicts of interests, and capital raising issues. The latter are mitigated by leveraging member capital through strategic alliances/joint ventures (e.g. with Nestle), although this can create farmer-partner conflicts of interest. He argues the company is positioned to be a major international player.

AWB, by contrast, opted for listed dual share classes (i.e. an IOF structure). Farmers alone are able to own A shares, with one vote per shareholder, benefits proportional to patronage, and board control. Any investor is able to own its listed B shares, with one vote per share, dividends proportional to investment, and minority control of board. Trechter et al. suggest this approach better resolves horizon, portfolio, agency cost and capital access issues than does the Fonterra model, but creates worse farmer-investor conflicts, and retains inter-farmer conflicts. Moreover, it likely means the ultimate loss of farmer control and focus as a condition of financial success, given the main source of increased profits is lowered farmer returns. They also note difficulties experienced in merging AWB with cooperatives.

4.6.2 Results of Cooperative Reorganisations

Research on cooperative post-merger performance has been mixed. Parliament and Taitt (1989) examine the post-merger performance of 53 Minnesota local cooperatives participating in 24 reorganisations over 1979 – 1984. They note a contradiction between earlier research findings showing poor post-merger performance (i.e. reduced profitability despite stronger sales growth) and yet continuing enthusiasm for cooperative reorganisations. Measuring financial performance of reorganisation participants relative to the average performance of a control sample of cooperatives, they find limited improvements in relative financial performance, and significant declines in some performance measures, suggesting that pre-reorganisation weaknesses in the participants rather than inherent reorganisation flaws constrain performance. At least one third of reorganisations, however, were found to improve performance.

Richards and Manfredo (2001), offer a possible explanation for continuing cooperative enthusiasm for reorganisation. They argue that mergers, acquisitions, joint ventures or strategic alliances among IOFs are usually justified in terms of improved operational efficiencies or strategic marketing gains, and typically create value through tapping economies of scale (rather than creating market power). Cooperatives' owners share these motivations, plus others: notably to relieve the cooperative capital constraint, which they argue constrains cooperative profitability for both operational and marketing reasons.

Examining the post-merger performance of US agricultural cooperatives consolidating over 1980 – 1998, they find that the cooperative capital constraint is the most significant factor motivating cooperative combinations with other organisations, by which they increase their financial flexibility and thereby can engage in activities increasing operational efficiency, market power, or both. Indeed, in contrast to the IOF literature, they find cooperative consolidations seek to absorb excess capacity, control supply, or increase negotiating power. They also find that even liquid and efficient cooperatives enjoy improved profitability with such business combinations, although this comes at the cost of sales growth (or vice versa). These authors conclude by arguing that consolidations may not be the least cost way for cooperatives to ease capital constraints, and hence that regulators and government agencies should promulgate legislation or regulations making equity financing more attractive.

Kenkel et al. (2003) examine the post-merger performance of 22 Oklahoma grain, farm supply and cotton ginning cooperatives – accounting for more than 25% of the state's cooperatives – merging over 1990 – 2001. They note that the pace of cooperative merger and consolidation activity has increased since the early 1990s (e.g. 367 among US grain cooperatives alone in 1993 – 1997), and once again that previous studies show cooperative mergers lead to sales growth but not increased profitability. In contrast, they find that post-merger cooperatives enjoy greater efficiency (lowered expense ratios) and a higher return on equity, compared with the synthetically combined

pre-merger business combination. These results remained after controlling for changes in pre- and post-merger business environment, even suggesting that the merged cooperatives enjoyed greater sales growth compared to peers.

4.6.3 Drivers and Success Factors

Hudson and Herndon (2002) assess factors influencing mergers, acquisitions, joint ventures and strategic alliances in US agricultural cooperatives, using survey data from 74 cooperatives. Reflecting wider US trends, they report a proliferation of consolidations in agricultural cooperatives, the majority of which involve horizontal integration of companies with like activities to achieve scale economies. They find that ownership diffusion in cooperatives allows cooperative management to pursue consolidation opportunities, but it also creates problems in their execution and the approvals process. Participation in consolidations was also found to be more likely when cooperatives had greater financial resources, suggesting such cooperatives initiated consolidations. However, asset turnover (the efficiency measure discussed in Section 4.1) did not appear to be an important driver of consolidations, suggesting that non-efficiency related factors were more important (despite efficiencies being obtained through consolidation). Placement in the market channel was found to affect the probability of participation in cooperative consolidations. They conclude that many of the same factors driving IOF consolidations also lie behind cooperative consolidations.

Fulton et al. (1996) examine factors affecting the failure or success of cooperative strategic alliances and joint ventures based on 1995 survey data from 20 US grain marketing cooperatives. They note that cooperative reorganisations are often motivated by the expectation of improved efficiency and financial performance. Recently reorganisations have increasingly taken shape in the form of strategic alliances and joint ventures rather than outright mergers and acquisitions. Based on their survey results they found that such reorganisations can indeed produce scale economies while preserving the identities of the partners. Success factors included trust, commitment and open communication as well as financial and operational considerations.

4.6.4 Obstacles to Cooperative Evolution

Hendrikse and Veerman (2001) develop a model showing that marketing cooperatives face inherent constraints relative to IOFs in entering into differentiated downstream product markets. They identify two types of hold-up that an agricultural production governance structure must address: the post-harvest hold-up due to perishability, and the investment hold-up faced by financiers when they do not control the investments to which their investment funds are applied. The counter-veiling power feature of a marketing cooperative is argued to resolve the first hold-up

problem. Conversely, IOFs are argued to more efficiently resolve the latter type of hold-up, as their shareholders usually have proportional control rights; in a traditional cooperative this is not the case, with control rights and ownership stakes unlikely to coincide. This latter disadvantage of marketing cooperatives is resolved where their investments are non-specific, such as when they market homogeneous products. However, the use of IOF over cooperative marketing is suggested where highly specific investments are required in the processing stage, as is the case for differentiated products.

Nilsson (1997b) proposes factors underlying considerable inertia in Swedish agricultural cooperative restructuring. With Sweden's entry into the EU in 1995, increased competitive pressures strained traditional policy preferences shown towards cooperatives, such as an ability to create regional cooperative monopolies. However, initially at least, Sweden's cooperatives were slow to adapt to this competitive environment. Nilsson explains some of this resistance in terms of Swedish law imposing the traditional cooperative model – including one-member-one-vote – allowing ideological considerations to dominate economic ones. This has tended to give disproportionate control rights to older and part-time farmers, who have less incentive to adopt new cooperative models than younger and full-time farmers. Societal and farmer attitudes – such as cooperatives being modelled along socialist lines, with various cross-subsidies among member classes – were also slow to change. While new and more flexible Swedish cooperative legislation was anticipated, existing law prevented traditional cooperatives from adopting more economic features in response to the changed competitive environment.

On the other hand, Carman (1997) argues that federated cooperatives and hybrid cooperative-IOF models may be ideal means of enabling cooperatives to achieve the scale required for global competition. Federated cooperatives, in which one cooperative is owned by several others, are suggested to efficiently balance the advantages of local flexibility and property rights protection of the primary cooperatives on the one hand, with the scale and geographic reach made possible through a second-tier cooperative on the other. As a variation, IOF subsidiaries owned by cooperatives but with up to 50% of their equity capital issued to outside investors are offered as achieving a similar balance. Thus it cannot be concluded that cooperatives are inherently unsustainable in a globalised agri-food supply chain.

4.6.5 Summary – Cooperative Evolution

The main themes emerging from this survey of cooperatives' organisational evolution are:

- 1) Despite restrictions on cooperative property rights and high cooperative collective decision-making costs that might be taken to imply that cooperatives will experience obstacles to reorganisation, cooperative mergers, acquisitions, alliances and joint ventures, as well as outright conversion to IOFs, are observable.

- 2) Such reorganisations stand on top of other institutional adaptations adopted by cooperatives as discussed in previous sections, such as shifts from traditional cooperative models to more NGC-like models to relieve capital constraints.
- 3) Reports of the death of agricultural cooperatives (i.e. their widespread conversion to IOFs) are premature. This should come as little surprise for those countries where cooperatives continue to enjoy tax advantages relative to other organisational forms (e.g. in the US, relative to IOFs). Demutualisations became common in the 1990s in many countries, often in the financial services sector, but also in agriculture. In some countries agricultural deregulation resulted in a decline in cooperatives in favour of IOFs. However, evidence from the US shows that conversions to IOFs form a small fraction of total cooperative reorganisations, with the bulk of such reorganisations maintaining the cooperative form. In Australia a reduced number of larger cooperatives have assumed increased significance in the deregulated dairy and wheat sectors. In New Zealand, widespread dairy sector reorganisations have maintained the cooperative form, despite cooperatives in New Zealand not enjoying the preferences over IOFs enjoyed by many of their overseas counterparts.
- 4) Earlier evidence on the success of cooperative reorganisations was not encouraging, but later studies find improved efficiency and profitability, with success factors including interpersonal factors (which might as easily be argued to matter in IOF reorganisations, it should be noted).
- 5) Cooperative reorganisations, more so than for IOFs, are motivated by a desire to relax capital constraints, and to absorb excess capacity, control supply or increase negotiating power. These are in addition to the usual motivations of improving efficiency and financial performance.
- 6) Inherent features of traditional cooperatives, such as the inter-generational conflicts arising due to the horizon problem – as well as inflexibilities in cooperative legislation and societal/farmer attitudes – can present obstacles to cooperative evolution.
- 7) Cooperatives can successfully adapt without abandoning the cooperative form, and where cooperatives convert to IOFs – even with initial farmer control – the sustainability of continued farmer control must be questioned in the light of the conflicts of interests it creates between farmer and non-farmer owners.

4.7 Policy Implications

- 1) Cooperatives are often argued to provide inferior financial performance to IOFs, or to be relatively inefficient. The weight of evidence on cooperative performance relative to IOF performance does not support such claims. Indeed, for the dairy sector in particular, the evidence appears to suggest the reverse. Hence the mere existence of cooperatives in an industry cannot be taken to mean that the industry's performance is being hampered. Moreover, the existence of cooperatives in an industry is predicted to at worst preserve the rate of industry innovation, and otherwise to increase the innovation rate.
- 2) Cooperatives tend to arise in industries where there is not strong competition, so assessing the competitive implications of cooperative involvement in an industry must bear this counterfactual in mind. Cooperative advantages are often predicted to decrease when competition is strong. Policies directed towards encouraging or discouraging cooperatives should therefore distinguish between industries in which potential competition is strong, and where it is weak.
- 3) Where cooperatives and IOFs coexist in an industry, the presence of cooperatives is likely to result in more competitive pricing of farm supplies. This has implications for competition policy, in that horizontal mergers in industries with coexisting cooperatives and IOFs are predicted to be less anti-competitive than those in which there are only IOFs.
- 4) While cooperatives enjoy certain competitive advantages over IOFs, such as an ability to credibly commit to oversupply at IOFs' expense, they are also often predicted to suffer disadvantages in competitive procurement. For example, when differentiated farm outputs are required, or where IOFs can cross-subsidise across product lines, IOFs are predicted to prevail. Conversely, cooperatives may enjoy procurement advantages over IOFs where farmers have private information. These too have competition policy implications, in that the impact of cooperative consolidations on stock/crop procurement by competing IOFs is not unambiguously negative.
- 5) The international competitiveness of cooperatives is not unambiguously better or worse than that of IOFs. While cooperative capital constraints and a producer-focus place them at a disadvantage relative to IOFs in this regard, they enjoy certain advantages over IOFs in providing supply security, and an ability to coordinate at the producer end of the agri-food supply chain. Also, cooperative adaptations, such as relaxing some of the constraints associated with traditional cooperative forms, and the increasing use of joint ventures and strategic alliances to enable greater farmer integration with downstream activities, have been effective in addressing some of the cooperative disadvantages in international competition.

- 6) Under some conditions (e.g. farmer homogeneity, or variable farm-level costs of quality) cooperatives are predicted to provide higher quality levels and consumer welfare than IOFs. Under such conditions there is a case for cooperatives acting as a substitute for quality regulation, as may be the case for traceability and food safety standards.
- 7) Cooperative governance is at its best when the cooperative owner-patrons have homogeneous interests, as is more likely when they produce an undifferentiated farm output, and/or where farmers are culturally alike. In such circumstances cooperatives are predicted to enjoy governance advantages relative to IOFs, and resolve agency cost issues via close monitoring where property rights constraints mean they cannot instead use high-powered incentives.
- 8) While increased farmer heterogeneity raises the costs of cooperative governance, this does not automatically mean they become inferior to IOFs, particularly where other aspects of industry structure mean that vertical integration by farmers remains valuable. Hence, as cooperatives become more involved in differentiated downstream product markets, the tradeoffs inherent in the cooperative form will become more finely balanced, in which case further cooperative evolution should be expected in response.
- 9) While cooperatives are indeed found to be financially constrained, this is not true under all circumstances. Evidence exists for cooperatives being the only financially viable organisational form in “hard times”. Where value-added processing investments are marginal for IOFs, cooperatives (particularly NGCs) have also been predicted to possibly be the only viable organisational form. Conversely, cooperatives are predicted to become less financially viable than IOFs when the industries in which they operate become competitive. Thus cooperative failure risk should be assessed in the light of the fact that cooperatives are often the only viable organisational form when the risk of failure is already high, and conversely that risk rises when the market imperfections leading to cooperative creation are not longer present.
- 10) Cooperative reorganisation is a common phenomenon, indicating “adaptive efficiency.” As well as the normal motivations shared with IOFs for reorganisation – greater efficiency and financial performance – cooperatives reorganise to relieve their capital constraints. Where cooperatives display inertia in responding to changing market circumstances, this is often due to inflexible cooperative legislation or cooperative/agricultural policy hampering cooperative adaptations, although it can also reflect societal/farmer conservatism. Flexible cooperative legislation is one means to remedy such inertia.

5. Cooperatives in New Zealand Agriculture

In this section we provide a high-level survey of the role and significance of cooperatives in New Zealand agriculture. It must be noted at the outset that the exercise is complicated by certain institutional arrangements in New Zealand. The first relates to the ability of cooperatives to organise themselves other than as cooperative companies, as discussed in Section 2, and to the absence of any requirement in New Zealand for cooperatives to identify themselves as such. Companies that wish to call themselves cooperative are required to register under the Cooperative Companies Act 1996, but even registered cooperatives need not call themselves cooperative. The Companies Office does not publish information on which companies are cooperative. These features complicate the identification of those organisations in New Zealand that are legally, let alone functionally, cooperatives.

The second institutional feature is a lack in New Zealand of reporting requirements for privately-owned organisations. While publicly listed companies – including those cooperatives with securities traded on NZX's various exchanges (NZSX, NZDX and NZAX) – are under obligation to make certain financial disclosures, most cooperatives do not fall into this category. Those cooperatives that are not listed but raising capital from investors must comply with securities legislation requirements for the filing of prospectuses, but these too are a limited source of cooperative information. Thus, even where cooperatives can be identified, there is generally little publicly-available financial or other relevant information available to researchers.

The data presented in the following sub-sections must therefore be regarded as providing incomplete “snapshots.” We have confined our focus to identifying the major cooperative and non-cooperative organisations within each of New Zealand's major agricultural sub-sectors, and where possible, to estimate their associated market shares. Given differences in data availability across sub-sectors, different types of market share estimates have been required, using for example either sales or production volumes. Comparisons across sectors will therefore involve a degree of inconsistency, as will any comparisons with market share figures for overseas counterparts. However, even these partial snapshots should provide a reasonable indication of where cooperatives have a greater or lesser stake in total sub-sector output relative to local IOF rivals, or relative to the stake of cooperatives in their overseas counterpart industries.

We begin with a brief background on the organisation of agriculture in New Zealand. In that discussion we take it as read that the bulk of primary production in pastoral farming and horticulture is organised around family-owned farms and orchards. We then examine the role and significance of cooperatives in each major agricultural sub-sector, providing international comparisons as well as brief policy discussions. A brief summary is then provided, followed by further comparisons with local non-agricultural industries and overseas agricultural sectors.

5.1 Background on New Zealand Agricultural Organisation

5.1.1 Cooperatives in the Late Nineteenth and Early Twentieth Centuries

New Zealand agriculture has used a combination of cooperative organisation and, from the 1920s to 1990s, statutory control/producer boards, as the main vehicles of industry coordination. Stephens (1936) provides a glimpse of cooperative activity in New Zealand in the late nineteenth and early twentieth centuries. Cooperatives were not evident prior to the 1880s, but developed rapidly after then in dairying, in Taranaki, the Waikato, and later Southland. Factors underlying this movement from IOF to cooperative dairy processing were the development of factory-based processors, enabling efficient and uniform dairy processing, as well as the rapidly expanding export trade, allowing the product to be marketed through well-defined channels. Further impetus for cooperation arose with a decline in output prices following World War I, with both cooperative mergers, and further extensions of cooperation into cooperative marketing and purchasing. Part of this impetus was to reduce the degree of competition between cooperatives in an environment of falling prices.

Stephens records that by the early 1930s cooperative dairy processing accounted for about 80% of production, due to the product's high perishability. Given the lack of wool processing, no cooperative such processors were in existence. Cooperative meat processing also did not exist, which Stephen argued was because the economics of processing gave the incumbent IOF processors effective monopolies, and all processors would face higher processing costs if cooperative rivals should enter the industry. Fruit and egg production was also satisfactorily serviced by IOFs, although some cooperative marketing of fruit, and also of pork, was undertaken.

As to the nature of cooperation then evident, Stephens states (1936, p. 745):

“... the primary urge to co-operation has, in nearly every case, been economic. It has been prompted by the realization of relatively weak bargaining power of the individual farmer when confronting the more integrated marketing firms, and the desire to overcome this by eliminating the middleman. Rightly or wrongly the farmer has thought that middlemen are making excessive profits and that some form of co-operative organization will increase the returns to the producer by reducing marketing costs, or transferring the profits of marketing from the middlemen to him.”

5.1.2 The Development of Statutory Producer Boards

Moran et al. (1996a) add to this early picture, describing the organisation and regulation of early twentieth century New Zealand agriculture. British and American companies had established meat

processing plants in New Zealand around the turn of the century, and also organised the shipping and marketing of produce to overseas markets. During World War I the British government commandeered all New Zealand meat, wool and dairy exports. The end of this arrangement coincided with a slump in prices, causing producers to lobby through their industry associations for the reinstatement of control measures to compete with overseas processors, transport companies, and importers. Control boards to regulate collection of farm output and its transportation to, and distribution in, Britain were set up in the early 1920s as a result of farmers' political power. Producer board control of agricultural marketing was reinforced by legislation such as the Primary Products Marketing Acts of 1936 and 1953, the 1961 Dairy Board Act, and the 1971 New Zealand Apple and Pear Marketing Act. Government-sanctioned producer marketing boards and cooperative processors enabled producers to control the processing and marketing of their produce.

Moran et al. argue that state support measures for farmers reflected their initially privileged political position early in New Zealand's colonisation, which survived despite the loss of this position with the inception of the welfare state in 1935. Support measures were reinforced by an acceptance of state intervention following the Second World War, and continued into the 1990s due to a combination of farmer political strength, and a political perception that these measures remain in the national interest (despite the change in ethos characterising New Zealand's economic reforms of the 1980s, and the realignment of global agriculture under GATT).

Moran et al. (1996b) attributed the power of New Zealand's early producer marketing boards to four pieces of legislation:

- 1) 1921 Board of Trade (Wool Industry) Regulations;
- 2) 1922 Meat Export Control Act;
- 3) 1923 Dairy Produce Control Act; and
- 4) 1924 Fruit Export Control Act.

The Meat Export Control Act was enabled by statute, whereas the other three required a majority vote by producers. The relevant boards largely confined themselves to promotion, reducing seasonal price fluctuations, and securing better freight and insurance rates. More recently they operated in three main areas: regulation and control, commercial, and industry servicing. The authors argue that dairy farmers are relatively homogeneous, explaining their traditional support for a single seller desk, whereas sheep and beef producers are more diverse (e.g. South Island high country versus Canterbury Plains farmers), resulting in a lack of cohesiveness, meaning that

producer boards were unable to exercise comprehensive control. Pipfruit and kiwifruit, like dairying, tend to be family farms, and also supportive of single seller desks.

Producer marketing boards shared some cooperative features. They were all under control of the farmers they represented, via boards of directors with majorities elected by producers. Board levies reflected producers' use of the boards, being based on units of output. However a difference between cooperatives and boards was that producers had to operate within the boards, whereas cooperative participation is normally voluntary.

5.1.3 Transition to New Industry Structures

Moran et al. note the pressure New Zealand came under in the 1990s – even from parties such as the US, Japan and the EU in which agricultural production is highly regulated and distorted by state intervention and support – to dismantle its producer marketing boards. The boards have been argued to be a source of unfair advantage to New Zealand farmers, and in the past decade a variety of institutional alternatives have been implemented. These include the marketing functions of the former NZDB being included in the major dairy cooperative merger creating Fonterra in 2001, or devolved to an industry body in the case of kiwifruit. Heron et al. (1998) interpret such shifts away from more centralised coordination to market coordination as creating structural space for new governance solutions. They argue that the upsurge in networking (e.g. via alliances, cooperatives, etc) is part of the search for new institutional solutions to secure competitiveness in the face of global restructuring.

New Zealand agriculture now comprises a mixture of cooperative, IOF and other private structures, in places meshed with the successors to former statutory producer boards. In the following discussions of the role and significance of cooperatives in each of New Zealand's major agricultural sub-sectors we will also touch on how some of these changes have affected current industry organisation.

5.2 Dairy

5.2.1 Milk Processing

Ward (1975) records the first dairy cooperative in New Zealand as the Otago Peninsula Cheese Factory formed in 1871. As reported above, cooperatives accounted for around 80% of production by the early twentieth century, and have remained dominant since. The contemporary New Zealand milk processing sector is clearly dominated by Fonterra, with even its two closest rivals – both of which are cooperatives – accounting for just over 3% of market share in total. Other

cooperative organisations include Gisborne Milk and Taumarunui Milk Co-op (1972) Ltd. Other milk processors include small, specialist or local organisations such as King Country Milk Limited, Topmilk Ltd, Fresha Valley Processors (Waipu) Ltd, and United Milk.

Table 5.1 – Milk Processing at a Glance

Share of merchandise exports:	19.2% ^a	Export share of production:	90% ^a
Share of world trade:	33%+ ^b		
Major Cooperatives:		Major Non-Cooperatives:	
➤ Fonterra		➤ Synlait to cease supplying milk to Fonterra in favour of independent supply and processing from 2007/8	
➤ Westland		➤ Open Country Cheese Co. under establishment as a specialist cheese producer	
➤ Tatua			
Market share of major cooperatives:	99%	Market share of major non-cooperatives:	<1%
Fonterra alone 96%. Based on litres processed.			
Cooperative market share in other countries:		Notes:	
➤ Australia	70%+ ^c	^a	New Zealand Official Yearbook 2004.
➤ Canada	42% ^d	^b	www.fonterra.com.
➤ Denmark	95% ^e	^c	Fitzgerald (2000), up from 50% in 1990.
➤ EU mean (median)	71% (82%) ^f	^d	2002. Gurung and McCagg (2005).
➤ Ireland	97% ^g	^e	Hobbs (2001).
➤ Norway	99% ^h	^f	Min. 20%, Max. 100%. van Bekkum and van Dijk (1997), in Cook et al. (2004b).
➤ United Kingdom	95% ⁱ	^g	McCarthy et al. (1998).
➤ United States	83% ^j	^h	Tomte (2003).
		ⁱ	2000/01. Plunkett Foundation.
		^j	2002. Cook et al. (2004b).

5.2.2 Downstream Processing

Fonterra also produces over 1,000 dairy-based ingredient products for the international food industry under the NZMP brand. While mostly involved in dairy commodity production, its New Zealand “fast moving consumer goods” brands include Mainland and Tip Top, while its overseas brands include Anchor and Fernleaf. Fonterra has diversified its milk supply sources such as through its interest in Australian company Bonlac, and formed an alliance with Nestle in North, Central and South America, and joint ventures with Arla Foods in Great Britain and Dairy Farmers of America. Tatua is the most specialised of the three major dairy cooperatives, producing consumer products and value-added ingredients. Westland is involved mainly in commodity production, but has also made investments to increase its share of value-added products.

The main IOF involved in downstream dairy processing is New Zealand Dairy Foods, producing milk products, cultured foods, butter, cheese and dry goods, and specialty cheeses. Until

November 2005 New Zealand Dairy Foods owned the Anchor brand in New Zealand, but was then cleared by the Commerce commission to sell that brand, as well as the Fernleaf and Country Soft brands to Fonterra. These transactions formed part of a brand swap agreed between Fonterra and NZDF in August 2005 in which NZDF acquired assets from Fonterra such as Meadow Fresh and Kiwi Meats. Other IOF processors, such as ice cream and cheese manufacturer Kapiti Fine Foods, and cheese producers such as Whitestone Cheese also have market niches. In November 2005, however, Fonterra agreed to purchase Kapiti Fine Foods from Foodstuffs Wellington, subject to Commerce Commission approval and due diligence.

Corporate dairy farmer Synlait intends to expand its milk production to 1% of New Zealand's output by the 2007/8 dairy season. It is to cease supplying Fonterra in favour of independently processing milk powder for export, and later, high-value functional ingredients for sale to international food manufacturers. New independent IOF cheese producer Open Country Cheese Co. predicted a production level of 5,000 tonnes of cheese (almost 0.4% of New Zealand's milk production, and about 1.5% of New Zealand's current export volumes of cheese) in the year to 30 September 2005. At full throughput it expects to be capable of producing more than 20,000 tonnes of cheese per annum, and also intends to engage in whey processing from 2005. Initially it sourced milk from Fonterra, but it now has over 20 supplying farmers augmenting the 50 million litres supplied by Fonterra.

5.2.3 Other Industry Activities

In 2003 Fonterra, Tatua, Westland, Mainland Products and New Zealand Dairy Foods formed Dairy Companies Association of New Zealand to represent the joint interests of New Zealand dairy companies on domestic and international policy issues. This role was formerly undertaken by the NZDB. As a subscription-based service provider, it now represents a body for industry-wide cooperation, suggesting that industry has seen a need for ongoing coordination on topics of common interest. Causes for such coordination include industry initiatives on securing, improving and allocating market access quotas such as those for butter exports to the EU.

5.2.4 Discussion

The dominance of cooperatives in New Zealand milk processing sits comfortably with the standard explanations of cooperative formation. Indeed, given the New Zealand sector's primary export focus – more so than other countries' dairy industries, which tend to concentrate on domestic sales – this could well account for New Zealand's dairy processing market share being at the upper limits observed worldwide.

Not only do New Zealand's 13,600 dairy farms compete to supply dairy processors with a highly perishable and time-collection sensitive product, but they must also vie with market power in the shipping, consumer food processing, and foreign marketing and distribution (e.g. supermarket chain), industries. To remain internationally competitive in distant export markets requires significant efficiencies in processing, marketing and distribution, necessitating economies of scale which only exacerbate any market power concerns dairy farmers would face if they did not organise cooperatively in processing and marketing. Given the historically high homogeneity (yet increasing differentiation) of their product, and shared challenges in international distribution and marketing, Fonterra is able to remain a viable organisational form despite having 11,600 owner-patrons (with associated costs of collective decision making).¹ It is actively experimenting with structural changes such as enabling suppliers to provide increased milk volumes at a contract price without also having to supply capital for processing and value-added activities.

All three major dairy cooperatives are increasingly active in value-added consumer goods processing, either alone or by alliances with international food processors. Thus far this represents a useful means of acquiring skills and networks as well as circumventing the capital constraints that cooperative dairy processors might otherwise face. The adoption of NGC-like characteristics by Tatua, and listed debt security issuance and fair value share pricing with voting proportional to supply for Fonterra, further relaxes the capital constraint. The smaller cooperatives should be able to remain viable so long as they establish secure market niches, as should new IOF processors Synlait and Open Country Cheese Co. It is unlikely that IOF processing will displace cooperative processing to any significant degree in the foreseeable future, although the competitive environment would change if Fonterra's market share were to fall to the point where its regulatory restrictions (requiring it not to impede open entry/exit by suppliers) were no longer imposed.¹⁸

5.3 Beef, Lamb and Venison

As reported above, cooperative meat processing was non-existent in the earlier part of the twentieth century, with the sector dominated by largely foreign IOFs. Cooperative meat processors were subsequently formed, such as Alliance in 1948 "in order that the producers should have for themselves all the profits that are in the business" (Calder (1990, p. 2)), and now account for roughly half of industry output. The current cooperative stake in the sector arises against a backdrop of significant industry rationalisation in the 1980s and 1990s, which itself reflected wider economic reforms over 1984 – 1995 (see Evans et al. (1996)) such as the removal of agricultural subsidies and resulting 40% decline in New Zealand's sheep flock. As noted by Calder and Tyson (1999), early rationalisation gave rise to three major groups of processors: cooperatives Alliance, PPCS and (then cooperative) AFFCO; overseas-owned IOF Weddell Crown, and IOF Goodman Fielder Wattie/Waitaki.

¹⁸ See Evans and Quigley (2001).

Plagued by industry overcapacity exacerbated by industrial relations inflexibilities, the failing Waitaki was subsequently split up, with AFFCO taking its North Island assets and Alliance taking those in the South Island. In part this cooperative survivorship was aided by the development of Freesia Investments, an investment subsidiary of the then New Zealand Meat Producers' Board. Freesia invested over \$100 million in New Zealand meat processing companies, predominantly cooperatives (Alliance, and the then cooperative AFFCO). Freesia also invested in the then unlisted but farmer-controlled IOF Richmond, in each case to "foster the establishment of producer-oriented marketing and processing companies ... [in the] belief that the producers are the natural owners of the meat processing and exporting sector" (Calder (1990, p. 1)). Weddell also subsequently failed, as did the prominent and innovative but smaller IOF processor Fortex (which also suffered financial scandal). AFFCO became a listed company in 1995, and while 70% of its shareholders remain its farmer suppliers, it is no longer a cooperative. Cooperative PPCS recently acquired listed IOF processor Richmond. Both examples illustrate organisational flexibility in the sector. Smaller, more focused and innovative marketers such as Wairarapa Lamb Cooperative, and IOF Blue Sky Meats, have also gained market niches. In part such industry changes and innovations have been driven by the relative ability of new entrants and incumbents to compete in labour practices.

Table 5.2 – Beef, Lamb and Venison Processing and Marketing at a Glance

Share of merchandise exports:	15% ^a	Export share of production:	
Share of world trade:		➤ Lamb	92% ^a
➤ Sheepmeat	50% ^a	➤ Mutton	87% ^a
➤ Beef	8% ^a	➤ Beef	83% ^a
Major Cooperatives:		Major Non-Cooperatives:	
➤ PPCS		➤ AFFCO	
➤ Alliance		➤ ANZCO Foods	
Market share of major cooperatives:		Market share of major non-cooperatives:	n.a.%
➤ Lamb	54%	Combined market share of PPCS, Alliance, AFFCO and ANZCO around 80%.	
➤ Beef	41%		
➤ Venison	69%		
PPCS share based on export market share.			
Cooperative market share in other countries:		Notes:	
➤ Australia	n.a.	^a New Zealand Official Yearbook 2004.	
➤ Canada	15% ^b	^b Livestock. Gurung and McCagg (2005).	
➤ Denmark	66% ^c	^c Hobbs (2001).	
➤ EU mean (median)	38% (30%) ^d	^d Meat. Min. 0%, Max. c80%. van Bekkum and van Dijk (1997), in Cook et al. (2004b).	
➤ Ireland	30% ^e	^e Beef and lamb. McCarthey et al. (1998).	
➤ Norway	75% ^f	^f Including pork. Tomte (2003).	
➤ United Kingdom	17%/11% ^g	^g Cattle/sheep. 2000/01. Plunkett Foundation.	
➤ United States	13% ^h	^h Meat. 2002. Cook et al. (2004b).	

Thus, while cooperatives have remained dominant in an industry suffering from painful restructuring due to overcapacity and resulting intense competition for stock, IOF processing also remains viable, both among the major processors (farmer-controlled AFFCO, and ANZCO owned by Itoham, Nippon Suisan and management) as well as second tier processors. This is despite cooperative processors having been argued to enjoy advantages over IOF processors when securing supplies in stock “procurement wars”. According to this argument cooperatives are able to sacrifice investment returns (due to poorly specified cooperative property rights) to enable them to pay farmers greater premiums than IOF processors for their stock. However, this ignores the fact that such over-payments for stock deplete equity reserves – for both cooperatives and IOFs – with cooperatives facing tighter capital constraints than IOFs. As noted by Calder (1990), meat producers show little loyalty to their cooperative processors, selling stock at the highest price. For these reasons, and those discussed in Section 4.2.2, cooperatives cannot be argued a priori to enjoy inherent advantages over IOFs in securing supply.

Some of the arguments supporting the formation of cooperative dairy processing also apply in the case of meat processing. Economies of scale in processing, marketing and distribution increase the risk of multiple competing farmers being exposed to market power abuse by large, concentrated IOF processors. The need for coordination along the entire agri-food supply chain – allowing food traceability and providing market information to farms – also suggests a rationale for cooperative ownership. However, livestock production does not suffer from the same risk of extreme perishability as does milk supply, and livestock can be economically transported to competing processors when local processors offer unfavourable terms, both of which reduce processor market power. Furthermore, beef and sheep producers cannot be assumed to enjoy the strong commonality of interest that is often attributed to dairy farmers, meaning the costs of cooperative ownership are relatively higher for cooperative meat processors.

Additionally, unlike dairy producers, who would compete against each other in export markets not constrained by market access property rights such as quotas (EU butter quotas are an exception), New Zealand meat producers face meat quotas in major export markets. The allocation of these meat quotas create secure property rights to export markets, diminishing the risk of New Zealand producers competing away export returns through uncoordinated export competition. For all of these reasons, the case for cooperative ownership is less compelling than in the dairy industry, which is reflected in the significantly lower cooperative market share for meat processing in both New Zealand and many other meat producing countries, although with notable exceptions such as Denmark and Norway.

Where the meat industry retains strong commonalities of interest, such as in industry research, and securing, enhancing and allocating meat quotas into the EU and US, some form of industry cooperation and coordination can be expected. Currently some of these functions are carried out by levy-funded statutory body, Meat & Wool New Zealand. Others are the function of voluntary

trade association Meat Industry Association of New Zealand, an industry body analogous to Dairy Companies Association of New Zealand.

5.4 Wool

Cooperative wool marketing appears to be the exception rather than the norm. According to its website, the British Wool Marketing Board is the only organisation in the world to collect, grade, sell and promote fleece wool.¹⁹ While the British Wool Board operates in a cooperative manner – operating as a non-profit organisation returning to producers the market price of their wool less its own costs – it is a statutory producer board (the only one remaining in Britain).

Table 5.3 – Wool Marketing at a Glance

Share of merchandise exports:	4% ^a	Export share of production:	90% ^a
Share of world trade:			
➤	Fifth largest sheep flock ^a		
➤	Second largest wool producer ^a		
Major Cooperatives:		Major Non-Cooperatives:	
➤	Primary Wool Co-operative	➤	The New Zealand Merino Company
		➤	PGG Wrightson
		➤	Reid Farmers
Market share of major cooperatives:	c7%	Market share of major non-cooperatives:	c93%
Primary Wool Co-operative's approximate 16% share of wool auction sales volumes, times auctions' 43% share of total wool sales.		➤ PGG Wrightson – Merino:	c70% ^{+b}
Cooperative market share in other countries:		Notes:	
➤	Australia	n.a.	^a New Zealand Official Yearbook 2004.
➤	Canada	n.a.	^b PGG Wrightson was formed by the September 2005 merger of Wrightson and Pyne Gould Guinness.
➤	Denmark	n.a.	Figure from Commerce Commission (2001).
➤	EU mean	n.a.	^c Statutory British Wool Marketing Board. 2000/01.
➤	Ireland	n.a.	Plunkett Foundation.
➤	Norway	n.a.	
➤	United Kingdom	100% ^c	^d Cooperatives accounted for 30% of all wool marketed in 1975/76 (USDA (1979)). In 2002 only US\$7.8 million of wool and mohair was cooperatively marketed (www.rurdev.usda.gov).
➤	United States	n.a. ^d	

Following longstanding dissatisfaction with returns on industry levies, New Zealand producers in 2002 voted (with 96.9% of votes in favour) to disestablish their statutory wool marketing organisation, Wool New Zealand. This move mirrored that of Australian wool producers, who in 2000 elected to trim the marketing functions of the Australian Wool Research and Promotion

¹⁹ Although the National Cooperative Council for Agriculture and Horticulture reports that 75% of Dutch wool marketed in 2002 was done so via cooperatives (www.cooperatie.nl).

Organisation. In both cases “industry good” activities such as research and development have been set up as grower-controlled private companies, but wool marketing has been left to private – generally IOF – organisations. The New Zealand Merino Company is one such marketing organisation. Handling the majority of the Merino clip it is owned 65% by Merino producers and 35% by listed IOF PGG Wrightson. It has developed direct linkages with customers using producer contracts requiring specific quantities of wool of certain specifications for particular manufacturers. Industry good research and development in New Zealand is now conducted via Wool Equities Limited, an IOF initially owned by non-Merino sheep farmers and listed on the NZX alternative Exchange, NZAX.

The nature of wool, and its processing and marketing, differs markedly from that of milk. The product is non-perishable, affording opportunity for it to be stored and marketed over time. It can be easily transported, diminishing any regional market power enjoyed by local processors. The product is inherently heterogeneous – ranging from “strong wools” (74% of production, used in carpets) through to fine wool types (Merino, for fashion garments), with numerous variations in key characteristics. These differences reduce the commonality of producer interests that lowers cooperative ownership costs for producers of more homogeneous products such as milk.

The main methods used to market wool reflect these features. Historically most wool has simply been sold at auction, representing one extreme of the governance spectrum, spot trading. Such trading has been facilitated by the use of independent testing to objectively classify wool clip characteristics, such as by New Zealand Wool Testing Authority Limited. Also, around 80% of all wool is exported in a relatively unrefined state (i.e. greasy, scoured or slipe form), with major buyers in China, the UK, Australia and India undertaking actual processing. Only 10% of the clip is processed in New Zealand, mostly for carpets and carpet yarns. Hence wool sellers have traditionally faced little buyer market power to spur the development of cooperative processing or marketing, thus offering little gain for the costs of ownership that such a development would entail.

Increasingly wool sellers are opting for direct sales to private buyers and end customers, offering greater market feedback regarding buyer specifications than do auctions, and assisting relationship-specific investments. Wool brokers are also commonly used, selling wool on a commission basis rather than purchasing it on their own account, thus sharing producers’ interest in maximising sales returns. Hence auctions now account for 43% of sales, with private sales to merchants accounting for a further 43%. Prior to the Wool Board’s disestablishment, McKinsey & Company (2000) record 11 registered wool brokers (six of them accounting for 90% of the wool handled), 139 registered private wool buyers (more than half of private sales being accounted for by the largest six), and 100 registered wool exporters (most owned by overseas processors, the largest 10 handling 75% of production).

By way of example, PGG Wrightson is the principal South Island wool auction centre and has the largest auction market share, followed by Primary Wool Co-operative. Listed IOF Allied Farmers – which began as a Taranaki farm supplies and marketing cooperative in 1913, but diversified and grew by acquisition, with conversion to an IOF in 1997 – offers wool producers a range of marketing options from auctions through to tenders, facilitated direct contracting with buyers, and forward contracts. Listed IOF Reid Farmers, and farm supplies cooperative CRT Society Limited, also offer wool trading services.

Thus, the heterogeneity and low-cost storability of wool, and lack of market power in its processing and end-use, appear to preclude or negate the need for cooperative processing, marketing and distribution. Spot sales – or increasingly market contracting – appear to provide sufficient coordination between buyers and sellers without the need for a “single seller”, or at least are not so inadequate that the costs of cooperative ownership are warranted. Where growers have sufficient commonality of interest – such as Merino growers in the development of Merino-based products and markets – they are able to form niche organisations through which to collectively pursue those interests. Interestingly this does not appear to require the establishment of cooperatives, rather being adequately achieved via grower-controlled IOFs. Should this solution not prove successful then cooperative development remains an option, but on the strength of present evidence this seems unlikely.

As for the meat industry, the statutory body Meat & Wool New Zealand remains responsible for industry activities such as maintaining and extending trade access for New Zealand wool, and providing wool-related technical advice. The Federation of New Zealand Wool Merchants, and New Zealand Council of Wool Exporters, are just two of a number of industry associations formed to cooperate on the advancement of industry interests.

5.5 Fishing and Aquaculture

It is difficult to identify any strict cooperatives in the New Zealand fishing sector. All major organisations involved in farming/catching fish, and in processing and marketing, tend to be private IOFs, with only Sanford being a listed IOF. A number of fishing organisations are active in the promotion and/or market development of particular fish species, although it is not clear that they do this on a cooperative basis. These organisations include Hoki Fishery Management Company, Eel Enhancement Company Ltd, New Zealand Abalone Farmers Association, New Zealand Marine Farming Association, New Zealand Mussel Industry Council and Queen Scallop Fishery.

A plethora of other industry organisations more clearly operate on a cooperative basis, having features such as one-member-one-vote, and levies for services provided related to members’

production level or holdings of individual transferable quota (ITQ). Examples include New Zealand Salmon Farmers Association, and Paua Industry Council. Many of these are umbrella bodies for organisations active in a particular fishery, or even specific fisheries management areas (FMAs) within a species. Most of these “near cooperatives” are involved mainly in the activities of representing industry members (e.g. managing their interface with government agencies such as Ministry of Fisheries), protecting and enhancing their fishing property rights (i.e. ITQ) – such as through the development of fisheries management plans, contestable stock assessment research, and other activities such as training.

Table 5.4 – Fishing and Aquaculture Production, Processing and Marketing at a Glance

Share of merchandise exports:	Fifth largest ^a	Export share of production:	90% ^a
Share of world trade:	n.a.		
Major Cooperatives:		Major Non-Cooperatives:	
➤ See text		➤ Aotearoa Fisheries (owns 50% of Sealord, all of Moana Pacific Fisheries, and others)	
		➤ Talley's (also owns Amaltal)	
		➤ Sanford (recently acquired many of Suminovich's Fisheries' assets)	
		➤ Vela Fishing	
Market share of major cooperatives:	n.a.	Market share of major non-cooperatives:	n.a.
Cooperative market share in other countries:		Notes:	
➤ Australia	n.a.	^a www.marketnewzealand.com.	
➤ Canada	n.a. ^b	^b McCall (2002) reports 51 fishery cooperatives with annual turnover of C\$138 million and assets of C\$64 million.	
➤ Denmark	n.a.	^c Fishermens' cooperative Norges Rafisklag is one of six fishing organisations with a legal right to the first-hand sale of fish caught in Norway's fishing zones.	
➤ EU mean	n.a.	See Kalsaas (2003).	
➤ Ireland	n.a.	^d USDA (1985). Marketing share of US fish landings in 1980.	
➤ Norway	n.a. ^c		
➤ United Kingdom	n.a.		
➤ United States	9% ^d		

The development of cooperative fisheries is argued to be an example of fishers coordinating in the face of insecure fishing rights to avoid over-exploitation of otherwise “commons” fisheries (e.g. see Ostrom (1990)). In New Zealand this is resolved via the quota management system (QMS), which creates secure – but proportional, not absolute – rights to catch species in given FMAs. Where property rights uncertainty remains in the QMS, this is to do with the total allowable catch set by reference to periodic stock assessments and estimates of sustainable yield, and competition between commercial fishers (those with ITQ) and recreational fishers whose catch limits continue to be determined by regulation. Activities to protect and enhance fishing property rights, such as through cooperative fisheries management, remain as areas for possible cooperation by industry members.

As well as predominantly private IOF fishing organisations, collectively-owned (e.g. tribal) Maori IOF fishing organisations are prominent in the sector. The most notable example is Aotearoa Fisheries Limited (AFL), which is or will soon be owned by Maori tribes (iwi), either directly via non-voting investor shares, or indirectly via the successor to the Treaty of Waitangi Fisheries Commission, Te Ohu Kai Moana, which owns all of AFL's voting shares, and 20% of its investor shares, on behalf of iwi. AFL owns half of New Zealand's largest integrated fishing company, Sealord, with the other half owned by Nippon Suisan Kaisha. It also owns half of Prepared Foods, and all of Moana Pacific Fisheries, Pacific Marine Farms and Chatham Processing. Other prominent Maori tribal fishers include Ngai Tahu Seafoods and Raukura Moana Fisheries.

Obvious reasons exist for why New Zealand fisheries would not adopt widespread use of cooperatives. For starters, fish catching is dominated by large commercial fishing fleets integrated with processing and marketing activities across diverse species. While there are many small independent fishers, they do not represent the dominant mode of primary production in the industry – unlike family-owned farms in the dairy, meat and wool sectors. This backward integration by processors/marketers into fish farming/catching (rather than forward integration by fishers into processing/marketing) suggests that market power in the industry resides not in large processors/marketers exhibiting economies of scale, but rather in the scarce property rights created under the QMS to avoid over-exploitation of the fisheries, in access to coastal space for marine farming (regulated under the Resource Management Act), and in access to technologies for successfully farming key aquaculture species. That backward integration – rather than forward – is the more sensible integration strategy in fishing is supported by the fact that many smaller iwi with fish quota entitlements but no established catching, processing and marketing infrastructure annually lease their entitlements to integrated operators (i.e. spot contracting). Also, economies of scale in catching and processing – especially in deep-sea species where the two are often combined on factory-ships – provide a counter-balance to any scale economies in land-based processing and marketing, further reducing the market-power imbalance rationale for cooperative organisation.

Apart from limited and possibly only loosely cooperative market development and promotion of selected fish species, cooperatives are therefore not a feature of fishing in New Zealand. Clearly there are numerous industry organisations based around specific fish species and FMAs, indicating that fishers belonging to these organisations have sufficient commonality of interest to overcome the costs of collective action. Indeed, federalised or umbrella bodies such as the New Zealand Seafood Industry Council (SeaFIC) are also common, indicating benefits to cross-species cooperation. However, the scope of such cooperative activities is narrow, with the main activities of fishing – farming/catching, processing and marketing – the preserve mainly of IOFs. A notable feature of fishing IOFs in New Zealand is that all but one of them (Sanford) are private, often family- or iwi-owned, companies. This raises the possibility that such organisations face capital constraints of the same nature as those faced by traditional cooperatives. Just as cooperatives

often adapt to such constraints by growing through the use of mergers, joint ventures and alliances, scarce fishing industry capital is similarly stretched via such liaisons. In some respects Sealord is similar to Fonterra, having used joint ventures and strategic alliances to expand its international supply and marketing resources.

5.6 Horticulture

5.6.1 Kiwifruit

Just as there are organisations in the New Zealand fishing industry that might be classified as “near cooperatives”, the same can be said of dominant kiwifruit organisation ZESPRI. Formally ZESPRI – which markets the bulk of kiwifruit produced in New Zealand – is a grower-controlled IOF. However, it is effectively the “single point of entry” to export markets for most of the kiwifruit crop, pooling export returns and allocating them to growers according to their production. It has also adopted a loyalty payment to producers with characteristics of a cooperative rebate to growers. ZESPRI describes itself as providing cooperative supply and integrated marketing delivery. This industry structure came about as a consequence of industry reforms where the statutory export monopoly of the former Kiwifruit Marketing Board was relinquished, but industry opted for continued centralised (although partly contestable) export marketing through a grower-controlled company.

Table 5.5 – Kiwifruit Post-Harvest Activities and Marketing at a Glance

Share of merchandise exports:	26% of hort. ^a	Export share of production:	95% ^c
Share of world trade:	25% of production ^b	Trays shipped by ZESPRI as ratio of trays submitted.	
Major Cooperatives (see text re ZESPRI):		Major Non-Cooperatives:	
➤ Satara		➤ ZESPRI	
➤ Eastpack		➤ Seeka Kiwifruit Industries	
		➤ G6 Kiwi	
Market share of major cooperatives:	c30%+^d	Market share of major non-cooperatives:	c70%
Satara and Eastpack kiwifruit packing share.		➤ Seeka	27%+ ^e
		➤ G6 Kiwi	17% ^f
Cooperative market share in other countries:		Notes:	
➤ Australia	n.a.	^a www.maf.govt.nz.	
➤ Canada	6% ^g	^b New Zealand Official Yearbook 2004.	
➤ Denmark	n.a.	^c ZESPRI 2004/05 annual report.	
➤ EU mean (median)	35% (35%) ^h	^d Personal communication, Satara.	
➤ Ireland	n.a.	^e www.seeka.co.nz.	
➤ Norway	n.a.	^f www.g6kiwi.co.nz.	
➤ United Kingdom	n.a.	^g Fruit and vegetables. 2002. Gurung and McCagg (2005).	
➤ United States	19% ⁱ	^h Fruit and vegetables. Min. 0%, Max. c80%. van Bakkum and van Dijk (1997), in Cook et al. (2004b).	
		ⁱ Fruit and vegetables. 2002. Cook et al. (2004b).	

Beneath ZESPRI, downstream “post-production” functions are carried out by a mixture of cooperatives and IOFs. For example, packhouse and coolstore facilities are provided by NZAX-listed cooperative Satara, unlisted cooperative Eastpack, NZSX-listed IOF Seeka, and private IOF G6 Kiwi. These four account for almost three quarters of kiwifruit handled in New Zealand.

With economies of scale in post-production activities and marketing, crop perishability, and multiple kiwifruit growers, certain conditions exist favouring cooperative organisation in the kiwifruit industry. Indeed, industry’s election of a semi-cooperative, centralised marketing model indicates a measure of homogeneity of interest that could favour further cooperative development in the industry (although this homogeneity of interest may diminish as alternative kiwifruit varieties become more common). However, the existence of significant IOF companies with the ability and incentive to independently market kiwifruit in export markets – should the existing regulations controlling unfettered export marketing be revised – could hinder such further cooperative development. Absent such regulations it is unclear therefore whether greater or lesser cooperative organisation would be the naturally resulting industry structure.

Industry representation is provided through New Zealand Kiwifruit Growers Inc.

5.6.2 Apples

The New Zealand apple industry perhaps represents a more extreme example of industry fragmentation possible with the abolition of a single seller desk. Apple exporting in New Zealand was deregulated in 2001, following initial industry reform in which the former statutory monopolist exporter, ENZA, had been passed into grower ownership. Corporate entities Guinness Peat Group (GPG) and FR Partners took advantage of ENZA’s ownership rules to take significant stakes in the organisation, thereby securing access to its single-seller status. Conflicts of interest between these parties and among growers resulted, leading to industry opting for the removal of ENZA’s export monopoly. These changes stand in marked contrast to the kiwifruit industry experience, which had been informed by that of the apple industry, where growers effectively voted for a continuation of a substantive export monopoly, but with limits on non-grower participation in that monopoly.

Currently almost 100 exporters handle the New Zealand apple crop. This has resulted in oversupply in the important European market, and returns so poor that many in the industry are contemplating exit. In October 2005 government rebuffed industry pleas for state assistance to remove unwanted apple trees before they become a disease risk. Certainly the international market environment for apple exporting has recently been unfavourable, with increases in competing EU and Chinese production, declining demand, and improved storage technologies reducing the marketing window for New Zealand producers. On top of these adverse market factors industry fractionation and uncoordinated export competition among New Zealand apple

growers has contributed to poor industry returns. Headlines like “Apple Growers ‘Killing’ Each Other,” and “Shaken to the Core,” make the point.²⁰

Table 5.6 – Apple Packing and Marketing at a Glance

Share of merchandise exports:	18% of hort. ^a	Export share of production:	55% ^a
Share of world trade:	5% ^a		
Major Cooperatives:		Major Non-Cooperatives:	
➤ Orchard Crisp (marketing)		➤ Turners & Growers (including ENZA brand)	
➤ Grower Trust Group (coolstores and marketing)			
➤ Fruitpackers (HB) Co-Operative (packing)			
Market share of major cooperatives:		Market share of major non-cooperatives:	
➤ Orchard Crisp	3%	➤ Turners & Growers (including ENZA brand)	c33% ^d
➤ Grower Trust Group	4% ^b		
➤ Fruitpackers	0.6% ^c		
Cartons marketed or exported as ratio of 17.8 million cartons of apples exported in 2003 ^e			
Cooperative market share in other countries:		Notes:	
➤ Australia	n.a.	^a	www.maf.govt.nz.
➤ Canada	6% ^f	^b	www.grower.co.nz.
➤ Denmark	n.a.	^c	www.frupak.co.nz.
➤ EU mean (median)	35% (35%) ^g	^d	“Shaken to the Core”, <i>Dominion Post</i> , 3 September 2005.
➤ Ireland	n.a.	^e	New Zealand Official Yearbook 2004.
➤ Norway	n.a.	^f	Fruit and vegetables. 2002. Gurung and McCagg (2005).
➤ United Kingdom	74% ^h	^g	Fruit and vegetables. Min. 0%, Max. c80%. van Bekkum and van Dijk (1997), in Cook et al. (2004b).
➤ United States	19% ⁱ	^h	2000/01. Plunkett Foundation.
		ⁱ	Fruit and vegetables. 2002. Cook et al. (2004b).

It would be unfair, however, to attribute this state entirely to the reform process described above. Conflicts among growers of different apple varieties were commonplace during the period of statutory monopoly exporting, with those growing new and premium varieties having conflicting interests with those continuing with older and less marketable varieties. Such heterogeneity of interest remains, and represents an obstacle to the industry endogenously cooperating to restore some form of export coordination, despite the apparent advantages offered by such coordination. Cooperation also remains important on matters such as market access, for example in overcoming biosecurity fears about New Zealand apples in Australia. Complicating the evolution of the apple industry is the fact that the comparative advantage of apples in their traditionally suitable locations is challenged by the increasing profitability of grape production.

²⁰ *Dominion Post*, 5 August 2005, and 3 September 2005, respectively.

It is therefore little surprise that cooperatives account for only a negligible share of industry output, with the largest apple marketer being NZSX-listed IOF Turners & Growers. While there are economies of scale in post-harvest handling (e.g. in providing coolstore facilities) and marketing, not to mention possible advantages in “cooperating to compete”, possibly high ownership costs in the face of apple-grower heterogeneity remain. Market power in apple processing does not appear to be a significant issue warranting cooperative organisation, with most apples sold as fresh fruit. Industry moves are afoot, however, to institute a quality-mark for New Zealand apples meeting certain specifications so as to improve the branding of New Zealand apples. This initiative comes from the industry representative, Pipfruit New Zealand Inc, following an industry-wide move away from use of toxic pesticides in favour of natural pest control. Such industry-wide endeavours indicate there are still areas of sufficient interest to all New Zealand apple growers that cooperative activity can be warranted. Spawned by industry crisis it is possible that greater cooperative organisation – among growers of specific apple varieties at least – will arise to better coordinate export activities.

5.7 Forestry

Table 5.7 – Forestry Production, Processing and Marketing at a Glance

Share of merchandise exports:	Third of total ^a	Export share of production:	72% ^a
Share of world trade:	1% of production ^a	Raw and processed roundwood equivalent as ratio of harvested log volume	
Major Cooperatives:		Major Non-Cooperatives:	
➤ Nil		➤ Carter Holt Harvey	
		➤ Tenon	
		➤ Harvard University Endowment Fund	
		➤ RREEF Infrastructure/Rayonier consortium	
		➤ Norse Skog Tasman	
		➤ Pan Pacific Forest Industries	
		➤ Winstone Pulp International	
Market share of major cooperatives:	n.a.	Market share of major non-cooperatives:	100%
Cooperative market share in other countries:		Notes:	
➤ Australia	n.a.	^a www.maf.govt.nz.	
➤ Canada	n.a.	^b Tomte (2003).	
➤ Denmark	n.a.		
➤ EU mean (median)	n.a.		
➤ Ireland	n.a.		
➤ Norway	80% ^b		
➤ United Kingdom	n.a.		
➤ United States	n.a.		

Like fishing, forestry is another sector in which backward integration by processors and marketers has been the imperative instead of forward integration by producers. Large scale economies exist in wood processing, and pulp and paper production, but these do not appear to provide an

incentive for cooperative organisation by forest growers. In part this has been because of significant state involvement in the forest growing and processing sector, resulting in a concentration of wood supply, as well as the adequacy of long-term contracting for securing access to supplies needed for efficient capacity utilisation of processing. This latter feature is emphasised by Boyd et al. (2000) as a suitable alternative to cooperative organisation by forest growers.

In fact recent trends suggest that backward vertical integration via processor ownership of wood supplies is becoming less common in both New Zealand and internationally. Integrated listed IOF forester and wood processor/pulp and paper manufacturer Carter Holt Harvey is New Zealand's largest forest owner with 12% of total exotic forest plantings. It has recently divested non-core forest assets, following listed IOF wood products manufacturer Tenon's exit from forestry ownership. Carter Holt Harvey's parent company, US IOF International Paper is itself divesting potentially all of its 2.5 million hectares of US forest land.²¹ Forest ownership is increasingly dominated by foreign timber management organisations (TIMOS) such as Harvard University's Endowment Fund, which offer more tax-efficient forestry ownership than can New Zealand organisations. Numerous private forest owners also exist, including iwi organisations, but they account for a relatively insignificant share of total commercial forest plantings. With four pulp and paper companies, eight panelboard companies, around 362 sawmillers and 50 re-manufacturers,²² even smaller forest growers enjoy local competition for their harvest, diminishing concerns about downstream market power exploitation. In fact, many of them opt for the other main marketing channel for New Zealand commercial forests, namely exporting unprocessed logs, mainly to processors in Asia. Thus foreign and local buyers compete for supplies of New Zealand forests.

Additionally, forest growers enjoy other advantages that set them apart from producers such as dairy farmers for whom cooperative organisation more naturally arises. Harvested logs are not highly perishable like milk, and can be transported internationally (which broadens their market and enhances competition for their harvest). Moreover, foresters have considerable discretion over exactly when to harvest, with optimal harvest usually falling within a window of some years. This provides forest growers with considerable latitude to time harvest to maximise returns, and enables them to contract for sale prior to harvest. Thus the normal market drivers for cooperative organisation are not present for forest growers.

Add to this the fact that forest growers in New Zealand vary markedly in terms of scale, location, forest maturity (and hence expected harvest date), extent of downstream processing involvement and/or other supply commitments. For many foresters harvest is a once-in-a-life-time event and forest management is a part-time activity, so repeated interactions to foster supply chain coordination are unwarranted and unnecessary. The heterogeneity of interest this creates means the costs of cooperative ownership by forest growers of downstream activities will be prohibitive.

²¹ "Money Really Does Grow on Trees", *Dominion Post*, 28 July 2005.
²² Figures from www.maf.govt.nz.

In part this is reflected by the multiplicity of industry organisations representing different types of forestry interests – from those representing major corporates, to those representing commercial forest owners, small tree growers (e.g. farm foresters), contractors and merchants. In late 2005 the formation of an umbrella industry organisation (“Newco”) was announced, intended to represent these various bodies on shared industry issues such as securing market access and interfacing with regulatory agencies. At best such organisations are only “near cooperatives”, however, and are not involved in the main sector activities of growing, harvesting, processing or marketing. There is potentially some rationale for cooperative forestry supplies, maintenance and (possibly) harvesting – since collectively foresters require such activities on an ongoing basis – but once again the heterogeneity of forest grower types, as well as their geographical dispersion, probably means that such activities being organised cooperatively would be unviable. Cooperative forestry research such as that between Scion (formerly Forest Research Institute) and industry is perhaps the rare exception to this general rule.

5.8 Rural Supplies

Table 5.8 – Rural Services at a Glance

Share of merchandise exports:	n.a.	Export share of production:	n.a.
Share of world trade:	n.a.		
Major Cooperatives:		Major Non-Cooperatives:	
➤ Combined Rural Traders (CRT)		➤ PGG Wrightson ^a	
➤ Farmlands Trading Society			
➤ Ashburton Trading Society			
Market share of major cooperatives:		Market share of major non-cooperatives:	30%
➤ CRT	35%	Based, respectively, on actual, and estimated, rural	
➤ Farmlands Trading	25%	services share of 2004 total operating revenue for	
➤ Ashburton Trading	10%	Wrightson and Pyne Gould Guinness.	
Based on operating revenue.			
Cooperative market share in other countries:		Notes:	
➤ Australia	n.a.	^a Listed IOF formed by the September 2005 merger	
➤ Canada	6%/13%/23% ^b	of Pyne Gould Guinness and Wrightson, the latter of	
➤ Denmark	57% ^c	which acquired Williams & Kettle in March 2005.	
➤ EU mean (median)	41% (50%) ^d	PGG merged with Reid Farmers in 2001.	
➤ Ireland	n.a.	^b Seeds/feed/fertiliser and chemicals. 2002. Gurung	
➤ Norway	n.a.	and McCagg (2005).	
➤ United Kingdom	18%/28%/29% ^e	^c Farm supply excluding fuels. Hobbs (2001).	
➤ United States	29% ^f	^d Farm inputs. Min. 0%, Max. 85%. van Bekkum and	
		van Dijk (1997), in Cook et al. (2004b).	
		^e Pesticides/fertiliser and lime/seeds. 2000/01.	
		Plunkett Foundation.	
		^f Farm inputs. 2002. Cook et al. (2004b).	

Rural supplies trading is dominated by the three major cooperatives, despite PGG Wrightson having a larger presence in the rural sector, given its other activities including livestock and wool trading, grain and seed supply, financial services, real estate, and irrigation. Each cooperative has a relatively defined geographical presence, with CRT dominant in Southland, Ashburton Trading Society operating throughout the South Island, and Famlands Trading Society in the North Island. Pyne Gould Guinness and Wrightson, through their September 2005 merger, have a nationwide presence.

The rationale for cooperative rural supplies businesses traditionally centred on ensuring farmers had access to a range and quality of supplies which IOF providers might find unprofitable to supply on an ongoing basis, or to enable farmers to share any profits from rural supply trading instead of passing them on to third party IOF investors. In each case cooperative ownership was fostered by the relatively homogeneous and stable farmer base, each of which reduces the costs of ownership.

It is unclear why New Zealand rural supply businesses should enjoy a higher market share than other countries, with only heavily-cooperatised Denmark reaching a market share close to that of cooperatives in New Zealand. It perhaps arises due to the importance of assured agricultural supplies in a small, isolated country. New Zealand rural supply businesses are less active than their overseas counterparts in supplying animal feed (given New Zealand's greater reliance on pastoral farming) and farm fuels.

5.9 Fertiliser Production/Importation

Cooperatives dominate fertiliser production in New Zealand, more so than proxy market shares for other countries would suggest. Historical reasons for cooperative ownership of fertiliser production included farmers' concern over fertiliser quality, but modern labelling systems and requirements have diminished the importance of this rationale. Concerns over regional market power enjoyed by cooperative suppliers are potentially an ongoing reason for cooperative organisation, with transportation cost barriers possibly restricting competitive fertiliser supply in all regions. Fertilisers used in New Zealand are largely undifferentiated, with superphosphate (combining phosphorus, calcium and sulphur) being the dominant product, and other compounds accounting for only 28% of sales. This product feature enhances the homogeneity of farmer-owner interests, reducing the costs of cooperative ownership relative to IOF ownership. These factors perhaps explain this ongoing dominance of New Zealand's two main cooperative fertiliser producers.

Ravensdown has diversified into the retail sale of chemicals, thereby competing in this area with rural supply firms.

Table 5.9 – Fertiliser Production/Importation at a Glance

Share of merchandise exports:	n.a.	Export share of production:	n.a.
Share of world trade:	n.a.		
Major Cooperatives:		Major Non-Cooperatives:	
➤ Ravensdown		➤ Summit-Quinphos (40% owned by Ballance,	
➤ Ballance Agri-Nutrients		60% by Sumitomo) ^a	
Market share of major cooperatives:	90%^b	Market share of major non-cooperatives:	7%^a
Share of manufacturing, marketing and distribution.		9% in North Island, 4% in South Island. Importation, marketing and distribution.	
Cooperative market share in other countries:		Notes:	
➤ Australia	n.a.	^a “Ballance to Increase Stake in Summit-Quinphos”,	
➤ Canada	23% ^c	www.scoop.co.nz.	
➤ Denmark	57% ^d	^b www.fertresearch.co.nz.	
➤ EU mean (median)	41% (50%) ^e	^c Fertiliser and chemicals. 2002. Gurung and McCagg (2005).	
➤ Ireland	n.a.	^d Farm supply excluding fuels. Hobbs (2001).	
➤ Norway	n.a.	^e Farm inputs. Min. 0%, Max. 85%. van Bekkum and van Dijk (1997), in Cook et al. (2004b).	
➤ United Kingdom	28% ^f	^f Fertiliser and lime supplies. 2000/01. Plunkett Foundation.	
➤ United States	29% ^g	^g Farm inputs. 2002. Cook et al. (2004b).	

5.10 Comparison with Other Sectors

5.10.1 Agricultural Cooperatives Overseas

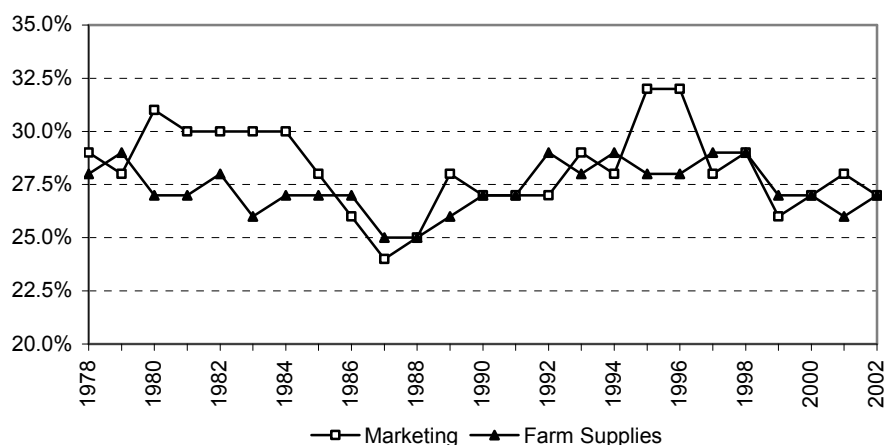
McCall (2002) provides a survey of cooperative activity in a selection of countries and regions. In terms of agricultural cooperatives she records:

- 1) Australia (New South Wales) – cooperative numbers remaining static over the 1990s, with 82 agricultural cooperatives generating turnover of A\$2.6 billion from an asset base of over A\$1 billion, and exports of A\$750 million.
- 2) Canada – 974 agricultural cooperatives, representing 642,000 producers and generating a combined business volume of C\$19.8 billion on assets of C\$6.7 billion.
- 3) UK – 553 agricultural cooperatives with a membership of 271,000 and annual turnover totalling UK£7.4 billion.
- 4) US – 3,346 agricultural cooperatives, owning more than 1,000 brands, and with a net business volume of US\$100 billion in 2000.

Good data is available indicating the trend in overall cooperative market shares in US and Canadian Agriculture. The US trends for agricultural marketing and supply cooperatives are

summarised in Figure 5.1. They indicate a fairly stable market share in the order of 25 – 30% for both agricultural marketing and supplies overall.

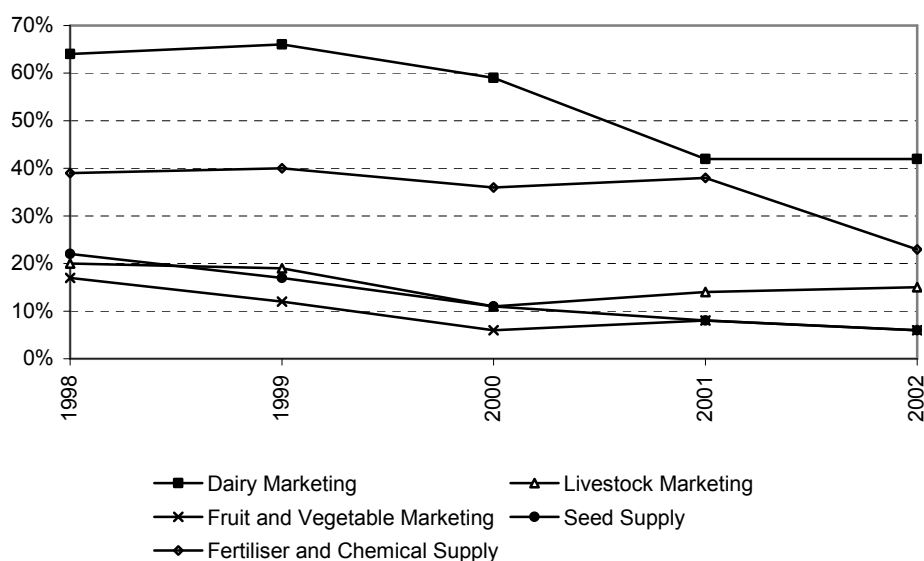
Figure 5.1 – Trends in US Agricultural Cooperative Market Shares 1978 – 2002



Source: www.rurdev.usda.gov.

In Canada a different trend is apparent, with the selected sectors all trending downwards, and much variation evident in overall market share levels. On the strength of these two sets of time series it would appear that considerable differences can arise in both the level and course of agricultural cooperative market shares, depending on the sector and country considered.

Figure 5.2 – Trends in Canadian Agricultural Cooperative Market Shares 1998 – 2002



Source: Gurung and McCagg (2005).

5.10.2 Cooperatives in New Zealand Non-Agricultural Sectors

Agricultural cooperatives are certainly common in New Zealand, and in some sectors they are the dominant form of organisation. Cooperatives are not confined to agriculture, however, arising across a range of sectors. It is worth noting that most business enterprises in New Zealand are small and medium-sized enterprises, 65% of which are operated by owners who provide all the business' labour without drawing a wage or salary (Ministry of Economic Development (2005)). Such enterprises can therefore be classed as a form of worker cooperative.

To illustrate the range of organisations classifying themselves as cooperatives in New Zealand, Table 5.1 summarises the scale of cooperatives by economic sector using membership data supplied by the New Zealand Co-operatives Association (NZCA). This data is not exhaustive, in that not all cooperatives belong to the NZCA. It does, however, provide a useful snapshot of the sectors in which cooperatives have a sizeable presence. While agricultural cooperatives tend to be the larger of the NZCA's members, grocery wholesalers and financial services also have a notable cooperative presence.

Table 5.1 – Turnover/Revenue and Assets of NZCA Members by Sector

Sector	Turnover/Revenue (\$m)				Assets (\$m)			
	2001	2002	2003	2004	2001	2002	2003	2004
Dairy	14,421	14,349	12,882	12,321	12,896	12,178	11,115	11,520
Wholesale Grocery	4,839	5,418	5,834	6,170	1,254	1,381	1,522	1,579
Meat Processing	2,306	2,278	2,521	3,317	902	892	1,164	1,060
Fertiliser	793	940	882	862	440	669	626	668
Trading Society	549	587	758	741	101	94	96	139
Trade Wholesaler	247	284	336	373	69	87	90	100
Pharmacy Wholesaler	76	138	152	160	12	23	24	26
Insurance Finance	119	120	126	153	282	270	257	247
Fresh Produce	78	84	89	99	36	44	44	64
Trade Wholesale Buyer	79	85	82	84	11	12	11	9
Motor Industry Finance	72	71	74	79	443	460	519	553
Packhouse/Marketing	43	51	57	61	44	51	50	52
Financial Services	46	45	50	53	559	606	662	759
Wool Marketing	14	26	33	33	3	6	7	7
Horticulture	23	23	26	27	15	21	23	23
Electricity Lines	25	21	21	25	78	95	102	115
Vehicle Testing	9	11	11	11	6	5	5	4
Vehicle Trades	9	11	11	11	6	5	5	4
Grain	1	8	10	9	4	6	5	6
Produce Wholesaler	7	6	6	8	5	3	5	6
Transport	-	-	7	7	-	-	6	5
Export Marketing	-	-	-	3	-	-	-	1
Irrigation	0	0	0	1	26	26	26	26
Community	0	0	-	-	0	-	-	-

Source: Data supplied by, and used with permission of, New Zealand Co-operatives Association.

Of note is the fact that many electricity lines companies in New Zealand are organised as functional cooperatives, where they are formally set up as IOFs owned by electricity consumer trusts. In this case lines company profits are rebated to customers, either by trust payouts of dividends they receive from their lines company, or through customer discounts. They thus have the characteristics of consumer cooperatives, although only imperfectly where trusts have customers (e.g. of network assets acquired after trust formation) who do not share in payouts or rebates. Evans and Meade (2005) report that 19 out of New Zealand's 28 electricity lines companies – including the largest network company, Vector – are organised in this fashion. One further lines company, Electricity Ashburton, is formally organised as a cooperative. Similar cooperative ownership, particularly of rural lines networks, is found overseas. Hansmann (1996) notes that while IOF utilities dominate electricity supply in the US, rural customer electricity cooperatives formed since the 1940s number almost 1,000, appear in 46 of 50 states, own almost 45% of all lines, cover 67% of the nation's land area, and supply around 10% of the population. Smaller electricity cooperatives in turn band together to own upstream generation and transmission cooperatives (Hansmann (1996), Burr (2004)).

5.11 Summary of New Zealand Agricultural Cooperative Survey

Of the New Zealand agricultural sectors surveyed, the following conclusions emerge regarding the role and significance of cooperatives in those sectors:

- 1) Cooperatives have been a feature of New Zealand agricultural organisation for much of its history, both before, during and after the dominance of statutory producer boards;
- 2) *Dairy processing* – cooperatives account for essentially all milk processing in New Zealand, much in line with dairy sectors overseas. IOFs are also involved in further downstream processing, either alone or in association with cooperatives.
- 3) *Meat processing and marketing* – cooperatives dominate the sector, at least for high-volume traditional products. In part this may reflect policy and support measures adopted for cooperatives in the industry restructuring of the 1980s. IOF processors also have a continuing presence, and are more commonly found in smaller, niche operations. Other than Denmark and Norway, most other countries surveyed had lower cooperative market shares in this sector.
- 4) *Wool marketing* – cooperatives play little part in the New Zealand wool sector, consistent with industry organisation in other countries. This is explicable in terms of wool's heterogeneity and storability, both of which diminish the traditional economic rationale for cooperative organisation.

- 5) *Fishing and aquaculture production, processing and marketing* – cooperatives play little role, with the imperative in this sector being backward integration by processors and marketers into catching and farming. Economies of scale in catching, and scarcity of fishing property rights, provide counter-veiling market power to any held by processors and marketers. IOFs therefore dominate the sector, and since most of them are unlisted entities, it can be argued that they face capital constraints analogous to those of traditional cooperatives. Widespread use of joint ventures and strategic alliances indicate that cooperative-like strategies are used to relieve these constraints. Cooperative-like organisations arise in the sector for a narrow range of common interest activities, such as the maintenance and enhancement of fishing property rights.
- 6) *Kiwifruit marketing and post-harvest operations* – formally kiwifruit marketing is via a dominant grower-controlled IOF, but in its nature ZESPRI is arguably a functional cooperative. This is in contrast to fruit and vegetable marketing in selected overseas countries, in which cooperative dominance is unusual. Kiwifruit homogeneity and shared issues regarding export marketing possibly enhance the economics of cooperative-like organisation in New Zealand. Cooperatives are present to a much lesser extent in post-harvest operations like packhouse and coolstore provision.
- 7) *Apple marketing* – cooperatives are all-but absent in the sector, which indicates a cooperative market share lower than that suggested by our survey of fruit and vegetable marketing overseas. This may be a reflection of the difficulties experienced by the sector following repeated restructuring and ultimate removal of its single seller desk, but also reflects conflicts of interest due to grower heterogeneity evident long before such restructuring. Cooperative organisation may be feasible within certain apple varieties, but the costs of ownership from a single industry cooperative are likely to be prohibitive. Specific cooperative activities, such as branding initiatives by Pipfruit New Zealand, indicate that the cooperative form may be feasible for at least some grower activities.
- 8) *Forestry production, processing and marketing* – like fishing and aquaculture, backward integration by processors and marketers into growing has historically been the imperative in this sector, and hence cooperatives play essentially no role. Increasingly even this backward integration is being eschewed in favour of contractual wood supply by non-integrated foresters. Given the adequacy of contracting for growers, as well as considerable heterogeneity between forestry operators – ranging from small independent growers through to large integrated processors – the ownership costs of large-scale forestry cooperatives would likely be high. Scope exists for cooperative organisation within certain forestry activities, but geographical dispersion may be a limiting factor in its development.

- 9) *Rural supplies* – cooperatives play a larger role in this sector than for other countries, perhaps due to the importance of security of rural supplies in a small, isolated country.
- 10) *Fertiliser production/importation* – more so than for rural supplies, cooperatives are dominant in this sector, and more so than for overseas industries. The homogeneity of most fertiliser used in New Zealand, and possible regional market power due to transport costs, may explain cooperative dominance in this sector.
- 11) Agricultural cooperatives are common overseas, and enjoy differing levels of dominance and trends in market share depending on the country and sector considered.
- 12) Cooperatives are found in many non-agricultural sectors in New Zealand, most notably in the wholesale grocery and wholesale distribution sectors, retailing, and the electricity distribution sector.

5.12 Policy Implications

From our survey of the role and significance of cooperatives in New Zealand agriculture, both relative to non-cooperative organisation in New Zealand and cooperative organisation in comparable overseas agricultural sectors, the following policy implications can be drawn:

- 1) Cooperatives do not systematically arise to a greater degree in New Zealand agriculture than they do overseas, although there is some variation between sectors.
- 2) It is not evident that cooperative dominance of certain New Zealand agricultural sectors necessarily constrains sector performance. Indeed, where it arises it can be suggested to underpin sector performance, for example due to the farmer-to-customer coordination that cooperatives can offer. In other cases a lack of coordination – notably in the apples sector – would be widely acknowledged to hamper sector performance, although cooperative organisation is not necessarily suggested as a response.
- 3) Agricultural cooperatives in New Zealand are adopting many variations on the traditional cooperative form, both to improve capital utilisation as well as to enhance integration through the supply chain. The flexibility afforded to them under New Zealand cooperative legislation – despite the absence of policy preferences – is likely to be important in facilitating such organisational innovations.
- 4) While the conversion of cooperatives to IOFs is not common in New Zealand agriculture, it does arise, indicating that the cooperative model is not entrenched.²³

²³ NZCA (personal communication) offers Veleco, ITM, Orb Communications, and Composite Retail Society, as examples of restructuring organisations that have adopted the cooperative model.

6. Areas for Further Research

Cooperative research in New Zealand is ripe for development but faces considerable data hurdles. The analysis presented in this report would be complemented by an examination of the role and significance of cooperatives in other New Zealand sectors such as financial services. Additional agricultural sectors would include the pork, poultry, eggs, other horticultural, wine and financial services sectors. It would also benefit from more refined estimates of market shares, as well as of performance.

More selective research, focusing on specific agricultural sectors, could be undertaken under one or more of the following headings:

- 1) *Performance* – The performance of New Zealand agricultural cooperatives could be compared with that of their overseas cooperative and IOF counterparts to identify where they have been relatively more or less successful.
- 2) *Innovation and growth* – For example, the extent to which cooperative capital constraints and growth strategies, and cooperative members' risk attitudes, affect wider economic development. This could be as narrow as an application of the methodology used by Chaddad and Cook (2002) to test for the presence of capital constraints. Alternatively it could be extended to a more macroeconomic level relating national economic growth to variables measuring the significance and nature of cooperatives.
- 3) *Competition* – For example, assessing the extent to which cooperatives trade off efficiency in members' supply decisions for competitive advantages (i.e. due to credible commitment to oversupply). The extent of any pro-competitive effects of cooperatives could also be examined, and in particular, where any such benefits might fall in the case of New Zealand agricultural cooperatives aimed primarily at export production. The possibility that vertical or horizontal integrations of cooperatives give rise to different welfare effects than integrations by IOFs is also worth examining.
- 4) *Globalisation* – The extent to which agricultural cooperatives in New Zealand have grown or maintained international sales and market share, relative to their foreign cooperative and IOF counterparts, would shed light on the extent to which cooperative innovations in New Zealand (in capital structures and otherwise) are proving adequate to meet global competitive challenges.
- 5) *Adaptive efficiency* – New Zealand's generic cooperative legislation and relatively neutral policy environment regarding organisational form creates a natural environment for cooperatives to evolve and adapt in ways not possible in jurisdictions with more prescriptive cooperative models. An examination of the relative diversity of cooperative

types in New Zealand should therefore shed light on which types of cooperative innovations and adaptations are best suited to meeting various organisational challenges. In particular, research into emerging NGC arrangements, including NGC capital structures, would also be fruitful. Alternatively, since changing technologies may have played a role in precipitating demutualisations in the insurance sector, an investigation of how changing transportation and communication technologies affects the ongoing need for cooperative coordination in other sectors (such as agriculture) would be useful.

- 6) *Political economy* – It would be interesting to further examine whether cooperative preferences (such as tax breaks or anti-trust exemptions) relative to IOFs can be justified on grounds of pro-competitive cooperative effects, or instead reflect political organisation and strength. The interplay between compulsory industry cooperation (e.g. through the Compulsory Levies Act) and cooperative governance would also be worth examining to determine the extent to which cooperative organisation is encouraged or supplanted by other such coordination devices.

7. Conclusions

Since the modern evolution of the cooperative model, building on cooperative principles such as those promulgated by the nineteenth century English Rochdale Pioneers, the cooperative form of enterprise has proved an enduring addition to the spectrum of organisational types commonly employed in commerce. Internationally the model has found particular application in the processing and marketing of certain agricultural products, and in producing and retailing certain agricultural supplies.

It would be inaccurate to suggest, however, that the cooperative model arises uniformly throughout agriculture. Particular sectors, such as dairy processing, exhibit features commonly predicted, and found, to be associated with successful cooperative organisation. Key among these are multiple competing suppliers providing a perishable product to processors and marketers, with those processors and marketers enjoying some measure of market power. However, these features are of themselves not sufficient to warrant cooperative rather than some other form of organisation. Homogeneity of interest among cooperative owners is also a critical factor, reducing the costs of cooperative ownership. In turn this homogeneity of interest is facilitated by product homogeneity – again, milk is the archetypal example (although even milk is increasingly differentiated) – as well as the cultural homogeneity, and stability, of the cooperative owners. Rural populations perhaps exhibit cultural homogeneity and stability more than do other subsets of the population, which would contribute to the relative success of the cooperative model in agriculture.

In other agricultural sectors these features are not present, and cooperative organisation is correspondingly rare. Wool, fishing and forestry are examples of sectors where product or producer heterogeneity, adequacy of contract markets, and market power in production (counter-veiling any such power in processing and marketing) diminish the viability of cooperative organisation. Not only do these features raise the costs of cooperative ownership, but they undermine one of its key rationales.

Increasing competition in global agricultural markets, combined with a greater range of strong consumer preferences, increases the imperative for agricultural producers to both differentiate their products, achieve scale economies in processing and marketing, and to coordinate along the supply chain to provide better channels of communication between producers and consumers. Agricultural cooperatives are one means of achieving this coordination, but for the reasons just mentioned cannot be a panacea for all agricultural sectors. It is clear, however, that they provide an effective means of doing so, in sectors where cooperative organisation is viable.

The ability of cooperatives to adapt to such changing imperatives is an important challenge. Theoretical and empirical research indicates that cooperatives face capital constraints not shared

by certain types of IOFs (those with listed shares).²⁴ Other types of IOFs, such as those unlisted IOFs common in New Zealand, arguably face similar capital constraints. Organisational adaptation has been an important strategy for increasing cooperative scale and competitiveness. In New Zealand – more so than in other countries – this adaptation has been facilitated by cooperative legislation that is less tied to particular cooperative principles than elsewhere, and which provides considerable flexibility as to the particular cooperative model adopted. Such flexibility is important for enabling variations on the traditional cooperative model that improve the efficiency of capital utilisation, access to capital, and the associated incentives for investments in innovation and value-added processing. In the international context cooperatives suffer certain inherent disadvantages relative to IOFs, but also enjoy unique advantages. Among these are their perceived reliability, product quality and ethical standards.

Whether or not the presence or absence of cooperatives in New Zealand agriculture presents policy issues hinges largely on whether there are artificial reasons for cooperative existence. These might include barriers to cooperative evolution, or unfounded policy preferences over other organisational forms. Alternatively, cooperatives may generate significant external benefits warranting their preference in policy. In the US a policy preference for cooperatives has been justified in terms of their perceived pro-competitive effects in mixed industry structures, and we expect that preference will have been influenced by the political economy of cooperatives, although we have not explored this element.²⁵ Evidence exists for the cooperative competitive yardstick effect, but research also indicates that it can be limited to certain types of cooperative, particularly those with open membership. In any case such a pro-competitive effect does not automatically justify policy preference, especially where cooperatives would arise in the absence of such preference, or where cooperatives give rise to inefficiencies not shared with IOFs. Our analysis of cooperatives in New Zealand agriculture suggests that cooperatives tend to arise without the benefit of policy preference, and their pro-competitive effects are often likely to be in export markets. Hence the assessment of policy preferences for cooperatives in New Zealand will differ from that applied in jurisdictions where cooperatives operate primarily in local markets, and/or where there is a significant IOF presence.

Finally, in general terms it would appear fair to presume that cooperatives in New Zealand exhibit a reasonable measure of “adaptive efficiency”. Cooperatives adopt adaptations, such as fair value share pricing, where traditional modes of cooperative organisation are a constraint. Some cooperatives abandon the cooperative model to become IOFs. In other cases, cooperatives merge or fail, or new types of cooperative emerge where they formerly did not exist. Based on such a presumption, any consideration of public policy questions posed by the presence, dominance and/or persistence of cooperatives must therefore carefully assess the relative merits of the best available alternatives that can be achieved. It must also have regard to the costs of attaining those

²⁴ Although in declining or struggling industries this is predicted to be more true for IOFs, and NZCA advises that its members rarely encounter difficulties in raising capital (even if non-equity instruments are often used).

²⁵ See, for example, Moran et al. (1996a), and Hueth and Marcoul (2002).

alternatives. The case for policy intervention would therefore be stronger where the cooperative model has clearly failed, or proved uniformly superior. This has not been identified in our very broad and high-level analysis of the role and significance of cooperatives in the New Zealand agricultural sector. A neutral policy setting is therefore suggested, enabling alternative organisational forms to be properly tested by pressures in the product, input and capital markets, and also in the market for corporate control.

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