



Watershed for New Zealand Dairy Industry

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Change is Inevitable

The New Zealand Dairy Board and the local dairy co-operative have been as much a part of New Zealand life as the cheese segments and the Marmite sandwiches that have been lunchbox staples for generations of New Zealand school children. On our overseas holidays we have been chuffed to see New Zealand brands in the dairy chillers of foreign supermarkets and we are somewhat smug about our perceived national competitive advantage in producing dairy products, despite the large distances to our biggest markets. So why change?

There is nothing more certain in this world than the inevitability that the New Zealand dairy industry's current competitive advantage will fade away, as the sources of that advantage – our relatively low production costs – are replicated or bettered by our competitors. The experience of the US dairy industry is illustrative. In the 1930s dairy producers in New York State had the lowest unit production cost for raw milk. This leading position was overtaken by Wisconsin farmers in the 1950s, capitalising on the relatively lower cost of land in that state. This competitive advantage was in turn lost to the California industry due largely to the availability of cheap cattle feed. But this advantage was eroded by the 1980s water shortages.

These days, in some industries, fast-moving technological change means that competitive advantages may be very short-lived. Horizons of 18 months or less are not unusual, with some lasting only a matter of weeks.¹

Irrespective of the sources of competitive advantage for the New Zealand dairy industry – technology, climatic conditions, input costs, currency factors or other reasons – the challenge today is to lever as much value as possible from that advantage, for as long as it may last, while continuing to seek out new advantages for the future, for example livestock improvement, product development and diversification, improved management practices and new market development. For New Zealand, one source of advantage may lie in developing a new business model, such as merging production, processing, marketing and distribution into a single vertically-integrated company.

Indeed, consolidation of the industry through mergers and acquisitions has been ongoing since the 1930s, with a steady fall in the number of processing companies. This horizontal integration was made possible by technological changes, largely in transportation and processing. However, a co-operative owned dairy board that is the sole exporter and regulator has inhibited other ways in which one industry might develop and now, because of the size of the two major co-operatives, is the source of export/processing dislocation, rather than co-ordination.

The merger of Kiwi Dairies, New Zealand Dairy Group and the New Zealand Dairy Board may be seen as the next step in such consolidation. However it cannot be achieved without a co-ordinated package of legislative change,

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structural realignment and a redesign of the regulatory framework in which the dairy industry operates.

Creating a regulatory framework that enables open entry of farmers, processors and marketers will foster the next stage in the development of the dairy industry in New Zealand and is key to ensuring that the

window of opportunity presented at this point in time, and the advantages that can be levered from the new business model, are not lost.

Adrian Orr

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1 See 'The world is Spinning Faster', Competition and Regulation Times, Issue 1, June 2000, NZISCR newsletter: www.iscr.org.nz/newsletter

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Down on the Farm is going Global

The dairy industry is New Zealand's only industry of global scale: it operates in more than 120 countries and territories around the world and contributes up to 5% of New Zealand's GDP.

In the 19th century even the smallest of communities had their own dairy company, many of which were privately-owned 'for profit' companies, to process the milk supplied by the farmers. The first co-operative dairy company was formed in 1871 and this became the most preferred form of ownership. Prior to refrigeration and rapid transport, dairy farmers were dependent on having facilities available to process milk into longer lasting products such as cheese and butter. They supported co-operatively owned processing companies because as suppliers to a co-operatively-owned company farmers were able to elect directors, keep an eye on management and have a say in business decisions – and all profits from selling dairy products were returned to farmers who had supplied the milk

The processing companies have a long history of developing export markets. As early as the 1840s cheese and butter were being exported to Australia from Banks Peninsula. The potential for an export industry in dairy products emerged in 1882 when the 'Dunedin' sailed to London with the first refrigerated shipment of meat and butter. Because local processing companies were thought to be too small to export efficiently, the government established the Dairy Produce Export Control Board in 1923 (which later became the New Zealand Dairy Board), to control the export of all dairy products from New Zealand. The NZDB's statutory single-desk status comes from the Dairy Board Act 1961. The NZDB was principally formed to take advantage of economies of scale, especially in transport and marketing,

and to avoid 'weak selling' (though this notion rested on a popular misunderstanding of the causes of the dramatic fall in commodity prices in the early 1920s).

The number of co-operative processing companies has fallen from 499 in 1933 to 4 in 2001, indicating a trend towards the merger and acquisition of processing companies. By May 2001 two large dairy companies (the New Zealand Dairy Group and Kiwi Co-operative Dairies) and two smaller companies (Tatua Co-operative Dairy Company Limited and Westland Co-operative Dairy Company Limited) had co-operative ownership of the NZDB based on their respective milk production (as at 31 May 2000 the respective shareholdings were 58, 37, 1 & 3).¹

Prior to the merger in June 2001 the co-operative processing companies still competed in the domestic market, but allocated their produce to the NZDB for the purpose of exporting, creating a vertically integrated dairy industry in New Zealand. (See Fig. 1)

Fig.1 – The Structure of the New Zealand Dairy Industry as at June 2001

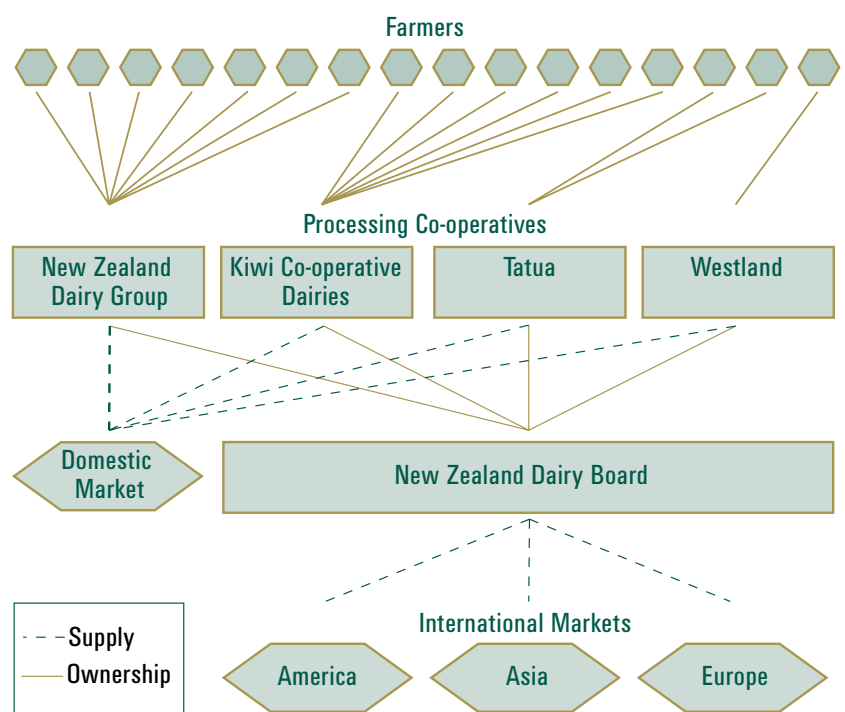
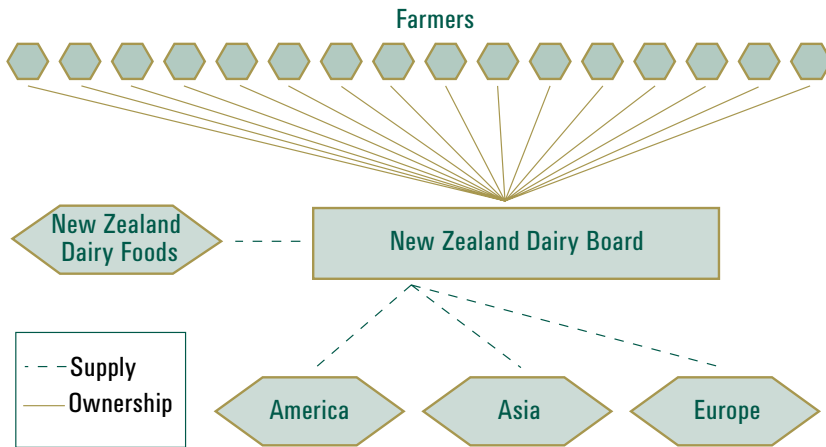


Fig.2 – The Structure of the New Zealand Dairy Industry as at June 2001



The structure of the New Zealand dairy industry following the merger of the two big processing co-operatives (New Zealand Dairy Group and Kiwi Co-operative Dairies) and the NZDB in June 2001 is shown above. The two smaller co-operatives (not shown in the diagram) have the option of joining Global Dairy or being paid out their respective shareholdings in the NZDB. At the time of

writing both plan to go their separate ways. The essential aim of the merger is to achieve further economies of scale and to eliminate processing, distribution and marketing co-ordination difficulties that occurred with the previous structure. The NZDB has estimated that the cost savings from the merger will be \$300 million dollars a year. As a part of the restructuring, the government will remove the single-desk seller status of the NZDB, creating an opportunity for other companies to export dairy products from New Zealand. And Global Dairy will be required to sell its half share in the distribution company, New Zealand Dairy Foods, to promote competition in the domestic market. It will retain Mainland which has a similar distribution function. (See Fig. 2)

¹ There are other small dairy companies in New Zealand that are not part owners of the NZDB. One example is the 15-supplier dairy company in Gisborne that supplies fresh and manufactured product widely in New Zealand. It supplies produce steadily across all seasons. If such companies export it is only with the permission of the NZDB.

Can a Large Single Co-operative Be Efficient?

Acceptance of the Global Dairy merger reaffirms dairy farmers' commitment to the co-operative form of business organisation. A co-operative structure requires that farmers must invest capital in, and have ownership of, the processing operations of the co-operative in proportion to the milk that they expect to supply.

Processor co-operatives were principally established by farmers to avoid being at the mercy of a monopoly purchaser they could not control.¹ If suppliers do not control the monopoly processor they will be paid just the minimum to ensure supply, and they miss out on the surplus profit – rent – resulting from the monopoly's restriction of output.² Co-operative processors solve this problem by making the suppliers the shareholders. Thus, if there are any surplus profits they are returned to suppliers in proportion to the milk that they have contributed.

However, monopoly co-operative processors may themselves produce inefficient levels of output by restricting supplier entry to the co-operative in situations where there is no threat of competition from other potential processing companies. Suppliers in the co-operative enjoy monopoly profits at the expense of those that are excluded. Open entry to the co-operative, however, will generally result in a level of production that is approximately economically efficient. Open entry implies that a supplier's entry decision is purely based on the price to be received and its cost of supply.

Under open entry, suppliers will enter until the costs of the last supplier – the cost of the sheds, fences, irrigation and cows, and the cost of the capital required by the co-operative – will equal the benefit from entry. In short, the cost of the last kg of milk to enter the co-operative will equal the price derived from the output it produces. This equality of cost and

price is the efficient level of milk throughput.

As long as there are no diseconomies of scale in processing this argument applies no matter what the co-operative's market share is. If processors emerge that have lower cost structures, or dairy product prices fall so that other farm activities are more profitable, it will be efficient for suppliers to exit the co-operative and take up alternative activities that produce more profit, or value added. Open exit requires that a cost-benefit decision by the supplier to leave the co-operative is not impeded by non-commercial barriers constructed by the co-operative.

Clearly, both open entry and exit are required for the co-operative to perform efficiently. If supplier entry or exit are inhibited the co-operative may produce an inefficient level of output, and/or produce at a cost that is higher than the efficient level.

The performance of a dairy co-operative is complicated by the practice of bundling. Because there is no competitive contract market for raw milk and hence no market price, the return on capital is bundled in one pay-out to suppliers.

However, this form of bundling need not preclude economic efficiency because the amount of share capital required is tied to the volume of milk supplied and suppliers will consider both their supply cost of raw milk and the capital requirements as their (marginal) cost of entry. If there are constant returns to scale the outcome will approximate the efficient level of output. There is no requirement for products to be sold in competitive commodity markets for this result to hold. It remains valid providing that the co-operative is earning a competitive return in processing, marketing and investment in product differentiation and there is open entry and exit.

“Processor co-operatives were principally established by farmers to avoid being at the mercy of a monopoly purchaser they could not control.”

- Open entry:

A supplier's entry decision is purely based on the price to be received and its cost of supply.

- Open exit:

Exit is a cost-benefit decision by the supplier that is not impeded by non-commercial barriers constructed by the co-operative.

A second form of bundling occurs when excess returns are persistently obtained from milk products sold in high value markets – e.g. quota rents – and these returns are bundled together with returns from milk commodity markets and result in a bundled price to suppliers. As this price is above the price of additional milk, it will encourage inefficient over-production as suppliers respond to the excessive bundled pay-out. Because milk is essentially a homogeneous commodity the efficient supplier price is the price in its lowest value use (the commodity milk price), and higher returns from, for example, product differentiation or quotas should be separately attributed to these activities.³

Under open entry a co-operative will have every incentive to ensure that suppliers are paid no more than the price derived from the milk they add to the processing business to ensure that existing suppliers will not be made worse off by the entry of suppliers responding to some other price. The only way this can be done is to separate out the excess returns and have any right to them purchased by entering suppliers at a valuation that reflects an assessment of the future excess returns. If the right to existing excess returns (for example, quota rents that are likely to persist) and the returns to processing capital are separated out and purchased at a 'fair market value' upon entry, efficient production levels can be approximated under the co-operative structure.

In the past, dairy co-operatives in New Zealand have had the power to decline applications for membership and to inhibit exit by retaining the value of the exiting supplier's processing capital in the co-operative for up to five years. If suppliers had a choice of co-operatives then all institutional structures in the dairy industry, including restrictions on entry to and exit from each co-operative, and all prices set within the industry, would be competitively determined. In this case, there would be no economic efficiency issues raised

by the institutional structures and pricing policies in the industry. The situation with respect to the newly formed Global Dairy is different because in its initial market position it will approximate a monopoly purchaser. Global Dairy could use this dominant position to restrict the entry and exit of suppliers and thus produce less than the efficient level of output. Global Dairy's position will also ensure that it has the best information about costs, prices and most other facets of the industry. This level of market dominance suggests that regulation should be designed to ensure that entry and exit are not impeded, and information asymmetry suggests that regulation should utilise incentives for information to be revealed in the regulatory process, rather than rely on heavy monitoring and oversight.

¹ The co-operative form also provided a way of solving co-ordination problems – such as milk collection – between the farms and the co-operatives. However this is less of a problem with modern refrigeration and transport technology.

² Monopoly requires that there is some limitation on entry to processing. Economies of scale in local plant may mean it is efficient for there to be just one local processor, but it will have only limited monopoly power if entry is feasible.

³ If quotas were auctioned off then quota rents would be eliminated.

The Price of Milk and the Value of Capital

The funds available for Global Dairy to distribute to suppliers (after payments of processing and marketing costs) comprise the returns to processing, rents from allocation of foreign quota and the price of raw milk. Capitalising the expected future returns to quota and processing into their value will be crucial to suppliers' entry and exit decisions.

But how will total returns to Global Dairy be allocated and who will do the allocation? The 'how' is complex: in an efficient market the milk price would be the wholesale commodity price of raw milk but the market for raw milk in New Zealand is very thin – there are few participants – and with the formation of Global Dairy it will be, at least initially, even thinner. Furthermore, because a supplier's capital is determined by the amount of milk supplied and the shares are not tradable, there will be no market valuation of the capital invested in Global Dairy. Without a market milk price or market valuation of capital, the different components of the total return will have to be unbundled through some administrative mechanism.

There are two approaches for calculating the raw-milk price and thus the return on suppliers' capital. The bottom-up approach would be to define what is meant by a 'commodity' use of milk and obtain the average price, net of processing costs, across all markets. The problem with this approach is that the definition of a 'commodity' is not precise and requires judgement. For example, is a basic product that has been concentrated by an innovative process to squeeze more out of a market access restriction still a commodity? A second problem is that the calculation requires a great deal of information that is properly the commercial property of Global Dairy. Thirdly and less importantly there are measurement

issues surrounding the calculation of the average.

A second approach to calculating the milk price is to estimate the quota rents and a 'normal' return on the assets employed in processing, distribution and marketing, subtract these from the gross income of Global Dairy, and call this residual the payment for raw milk. The normal return on processing, distribution and marketing assets would be used to calculate a fair market value of these assets. The use of best-practice production cost estimates would mean that any costs or benefits attached to Global Dairy's departure from best practice would not be reflected in the estimated price of raw milk, but would be borne by Global Dairy's assets. This top-down approach to valuation requires good estimates of best-practice processing and marketing costs that will be subject to much uncertainty and judgements about which experts may legitimately have different views. Indeed, this is likely to be more complex than the calculation of telecommunications services costs, for which there has been much research, many models built, and yet for which there remains much scope for differences in view about the correct methodology as well as the correct price. A top-down approach also requires the use of commercially sensitive information that is the property of Global Dairy.

Both methods are likely to have implications for the relationship between the price of milk and the value of capital in processing, distribution and marketing. The profitability of the dairy industry will continue to fluctuate with factors such as the value of the New Zealand dollar and world commodity prices just as it has in the past. Should asset values and milk prices go up in good years or are they unrelated or even negatively related?

“There are two approaches for calculating the raw-milk price and thus the return on suppliers' capital.”

“With open entry and exit, Global Dairy will have strong incentives to set the correct valuation of processing capital (equivalent to the fair value price) and the associated efficient price for milk.”

The source of the variation may have differing effects. Fluctuations in world demand as a result of fluctuations in economic growth may, arguably, yield an increase in the milk price if the demand for commodity milk expands relative to that of value added products. However the milk price may not go up if higher value products are in relatively greater demand than commodity milk. The extent, or even existence, of such relationships is speculative and may differ between the two approaches. In the bottom up approach any surplus generated by economies of scale in processing, distribution and marketing will be reflected in the valuation of Global Dairy’s capital. In the top-down approach, the allocation of the bounty will depend upon how the best practice costs are calculated and scale economies are treated. The concept of a normal return suggests it should be the milk price that reflects higher returns to processing, distribution and marketing.

Whoever sets the milk price has a challenging job, but if it is Global Dairy at least it has the best information to do so.¹ Efficient use will be made of this information if Global Dairy has incentives to utilise it to set prices. With open entry and exit, Global Dairy will have strong incentives to set the correct valuation of processing capital (equivalent to the fair value price) and the associated efficient price for milk. If it over-values the capital relative to the price of milk there will be exit by suppliers when their supply would be profitable to the co-operative. If it sets the capital value too low there will be a demand for entry beyond that which would be profitable. In short there are strong incentives for Global Dairy to set the ‘right’ value of the capital invested in processing, whichever method is used to do the calculation. Indeed, both methods require that the price that is set be forward looking.² Because it will reflect anticipated effects on supplier entry and exit and the extent of earnings retained for investment, the milk price (capital valuation) decision has a significant forward-looking element and therefore

provides (publicly) a best estimate of the value of processing capital.

Since open entry and exit provide Global Dairy with the incentive to set the capital value at the efficient level, and because a regulator has neither the incentive nor the information that Global Dairy has, it is efficient for the regulator to ensure open entry and exit rather than attempt to regulate the price of milk. Furthermore this approach places the strategic decision of the milk price on those who have the responsibility for working in the interests of Global Dairy. If the milk price were to be regulated, this responsibility would be shared between the regulator and Global Dairy management and reduce the accountability of the management for performance of the company.

¹ In fact it is proposed that the milk price and the valuation of capital will be determined by the Shareholders’ Council.

² This applies even when the payment is to apply to the previous year’s production.

The Discipline of Open Entry and Exit

How does open entry and exit provide the right incentives for efficient pricing? Under the co-operative structure, suppliers receive payments composed of three elements: quota rents, return on processor capital and payment for the milk itself.¹ New entrants will be required to put equity into the company based on the co-operative's valuation of the capital share held by each existing supplier. Suppliers that resign receive this 'fair valuation' of the capital they have in Global Dairy. What are the implications of Global Dairy getting the balance between these elements wrong? This article considers four possible scenarios under an open entry and exit regime. Note, the milk price, the quota rent and the annualised share valuations must add up to Global Dairy's total return.²

- **Milk price is too high and the value of the equity is too low.**

This will result in Global Dairy making payments for milk in excess of the commodity price, and thus over time lead to a deterioration in the capital base of the company. New entrants will be attracted by the high milk price and the low equity required, increasing the number of suppliers who must be paid at these prices.³ For Global Dairy this combination of inefficient prices will produce a level of entry that will be unsustainable.

- **Milk price is too high and the value of the equity is too high.**

These prices will result in Global Dairy making payments to suppliers that are in excess of economic earnings and payments to exiting suppliers that are in excess of the true value of their capital. While this may not result in net entry to or exist from Global Dairy, its operating performance will be unsustainable. The higher pay-outs

on milk and high price of equity will be unsustainable since Global Dairy will be depleting its balance sheet to sustain them. This will in turn make the high price of the equity increasingly unrealistic. At some point this may lead to a run on Global Dairy by suppliers attempting to exist in anticipation of the collapse of the co-operative. This strategy is also completely inconsistent with the stated Global Dairy strategy of international expansion and acquisition, which will require it to raise more, not less, capital.

- **Milk price is too low and the value of the equity is too low.**

This will result in an accumulation of profits in the company, which will make the low equity price increasingly unrealistic. Suppliers will respond by entering Global Dairy in anticipation of obtaining a share of the retained profits and this will increase pressure from suppliers for a higher return on farm (milk earnings) and processor capital.

- **Milk price is too low and the value of the equity is too high.**

This will result in suppliers exiting Global Dairy, responding to low returns for milk and the high equity pay-out. There will be no entry to offset the impact of this exit on the balance sheet of Global Dairy. This policy will be commercially unsustainable.

In all of these four cases open entry and exit are central to the incentives for Global Dairy to price efficiently. In the absence of open entry and exit it may be possible to sustain inefficient pricing policies over relatively long periods but in the presence of open entry and exit inefficient policies will have a much more rapid and substantial impact on the operating position and sustainability of Global Dairy.

1 Quota rents are not considered further in this article.

2 These scenarios have been simplified to illustrate the principles. The actual situation will be affected by potential and actual suppliers' expectations.

3 Actual entry will depend upon the extent to which potential suppliers view the imbalance in price and value as being temporary or sustainable.

What does Open Entry To and Exit From Global Dairy Mean?

“A key characteristic of the proposed regulations is that suppliers should encounter no barriers in either becoming suppliers, and thus shareholders, of Global Dairy (open entry), or in leaving Global Dairy (open exit).”

The dairy industry merger includes draft legislation for the regulatory framework in which Global Dairy must operate. A key characteristic of the proposed regulations is that suppliers should encounter no barriers in either becoming suppliers, and thus shareholders, of Global Dairy (open entry), or in leaving Global Dairy (open exit).

As a potential or existing shareholder, how might one determine whether there is open entry and exit to and from Global Dairy? And how might the regulations ensure that Global Dairy operates an open entry and exit regime?

Open entry and exit is more likely where:

- Potential suppliers have essentially the same characteristics as existing suppliers, therefore the same contract can be made available to them.
- The regulations define the minimum conditions required for entry to and exit from Global Dairy. This provides incentives for Global Dairy management to value capital and wholesale milk prices at the efficient level. There can therefore be no entry or exit subsidies.
- The regulations are based on readily observable characteristics and behaviours thus minimising the costs of compliance for Global Dairy and the costs of assessing claims that the regulations have been breached.
- The open entry and exit regime is consistent with the co-operative structure of Global Dairy, and takes account of reasonable Global Dairy concerns about its liquidity, its milk processing capacity and the transport costs associated with accepting suppliers in remote locations.

A regime that requires Global Dairy to accept any supplier at its posted wholesale

supplier-contract price of milk may result in the co-operative facing substantially increased costs, if suppliers in very remote locations take advantage of the cross-subsidy inherent in the uniform return paid to all suppliers in most regions. The proposed regulations do not allow this, nevertheless potential entrants in remote areas do have the option of paying to transport milk to the nearest point where Global Dairy is already collecting milk. Transportation costs are not therefore an impediment to a successful open entry and exit regime.

Entry may also be affected by Global Dairy's capacity to process milk. The regulations pose a reasonable time frame for Global Dairy to accept milk from any potential supplier, so that the co-operative can prepare for the additional capacity. Existing suppliers who plan expansion will also be subject to the same timeframes. Supplier exit from Global Dairy may also raise planning and capacity utilisation issues for the co-operative, but these are unlikely to be as onerous as those associated with expansions in capacity.

There is no need for Global Dairy to own specific assets, such as milk vats, sited on farms. Indeed, ownership of such assets can lead to disputes in the event of a supplier exiting the co-operative. Assurance of milk quality and co-ordination over the use of assets between supplier and processor can be achieved through contracts, as occurs in other primary industries.¹ Furthermore, under private contracts suppliers' capital commitment to Global Dairy would be lower, thereby reducing their capital 'at risk' in the co-operative.²

Global Dairy has expressed concerns about any requirement that it pay out cash to exiting suppliers and there is provision for exiting suppliers to be paid the cash equivalent of their capital value in capital notes.³

These securities (with a rate of interest set at the date of issue) will be tradeable in financial markets. A benefit of capital notes is that tradeable Global Dairy securities will engage financial analysts in monitoring the performance of the company. However payment in the form of capital notes may require specialist expertise on the part of the regulatory body to determine whether the capital notes are indeed equivalent to cash.

In a large scale defection of suppliers, Global Dairy may wish to avoid a ‘fire sale’ of assets to raise sufficient cash. If more than 5% of suppliers exit in any one year, they may receive, at the discretion of Global Dairy’s directors, a pro rata allocation of capital notes and preference shares redeemable under certain conditions. Although conditions relating to exit should take account of Global Dairy’s concerns about its liquidity, this aspect raises several important issues, among them whether the 5% rule is an impediment to exit.

From the company’s point of view it is a self-defence option in the event that a large number of suppliers choose to exit, ie there is a ‘run on the bank’. But the fact is that banks have to manage their affairs given the possibility of a run, so what is different about Global Dairy? One possibility is that Global Dairy’s assets are more specific in use and hence less tradeable than bank assets.

In reality, major exits from Global Dairy are likely to occur from a decline in the profitability of dairy farming relative to other land uses or if there is another significant competitor in the market for raw milk.

Ironically, if there were competing co-operatives the 5% threshold would be no issue. Co-operatives would compete on ‘self-defence’ options, such as Global Dairy’s 5% threshold, as well as on milk and capital prices and suppliers would choose their processor with full knowledge of these factors.

It is a lack of competition in milk processing and marketing for the immediate future that makes the 5% rule of concern. The lack of competition implies that the rule applies for

almost all actual and potential suppliers of milk. However the Global Dairy exit conditions are less onerous than what had been applied by the two large dairy co-operatives prior to the merger, so the ruling does not add extra exit barriers.

The actual effect of the rule may depend on the nature of the strategic game that is played between Global Dairy and a prospective competitor. Any processor of significant size entering the market will know about the rule and address this in the way it competes and in the contracts it offers. If it can establish the belief that it can outperform Global Dairy, the rule may even stimulate exit as it is possible that being first to exit is more profitable.

Of course Global Dairy’s suppliers are also equity investors in the company. Equity investment is risky and there is no guarantee that a supplier will make a normal return on the capital invested. The 5% rule reduces the value of a supplier’s investment in the event of a run: it is the co-operative equivalent of a declining share price in the corporate sector.

1 Boyd, Haleigh, Lewis Evans and Neil Quigley. 2000. The Efficiency of Contractual Arrangements in Private Agricultural Product Markets. NZISCR Research Paper: www.iscr.org.nz/research.

2 In fact, the regulations provide that Global Dairy sell the vat to the exiting supplier at a ‘fair value’ price.

3 There would seem no compelling reason why exiting suppliers could not be given the choice of having their capital paid out in cash or as notes.

“In a large scale defection of suppliers, Global Dairy may wish to avoid a ‘fire sale’ of assets to raise sufficient cash”

Capital Structure and Co-operative Ownership

“... as co-operatives get larger, relative performance can be expected to place the weight of advantage on traded corporations.”

Under the co-operative form of organisation, suppliers hold shares in proportion to the input they supply. The co-operative form has the advantage of aligning the interests of suppliers and owners. In addition, the homogeneous quality of milk measured by milk solids means that all suppliers can be treated the same.¹ This lowers transactions costs for a dairy co-operative and lessens the potential sources of disputes between the co-operative and suppliers and among suppliers. However there are also disadvantages. Holding shares in proportion to the input supplied has negative implications for the effective supervision and monitoring of management in the co-operative organisation when compared to a corporate organisation with tradable shares.

Company performance is greatly enhanced by active monitoring of management by shareholders and debt-holders. Monitoring requires resources and incentives. For corporations with traded shares these requirements are normally satisfied by having shareholders with relatively large concentrated shareholdings who can allocate resources to monitoring and who have an ability to affect strategy through positions on the board. Relatively small shareholders normally have access to fewer resources and weaker incentives to monitor and affect management to the extent that they rely on the effort of, and appear to ‘free ride’ on, the monitoring of larger shareholders.²

As share ownership is restricted by the amount of milk supplied in large dairy co-operatives, there is not the same concentrated shareholding interest, and thus the same intensity of managerial and strategic oversight, as found in corporations where shares are traded. Even the potential that one party might

require a concentrated shareholding may be sufficient to promote efficiency in corporations with traded shares. It might therefore be expected that we would observe poorer performance from co-operatives compared to corporates. This is not necessarily the case for smaller co-operatives, because the smaller the co-operative the larger the influence of any given shareholder. Moreover small co-operatives face lower transactions costs that may outweigh the costs resulting from the need to maintain greater oversight of management and make them relatively more efficient. But as co-operatives get larger, relative performance can be expected to place the weight of advantage on traded corporations.

Global Dairy will have a ‘Shareholders’ Council’ elected by the suppliers under a different process from that used to elect the board of directors, and the council will have a limited oversight role. The creation of a Shareholders’ Council seems to suggest that Global Dairy is aware that the governance of large co-operatives has limited scope for intensive effective managerial monitoring. However the Shareholders’ Council cannot substitute for a ‘concentrated interest’ of shareholders, and indeed provides no additional incentive for Global Dairy to perform well as an organisation.³

Companies typically raise capital through debt or equity. When a company’s organisational structure provides less intense internal monitoring, it affects the company’s ability to raise debt. Any potential lender will want to be assured that there are strong incentives for shareholders to monitor the performance of the company. Moreover, because share allocations are tied to milk supplied, equity capital can only be raised from the suppliers, either

through retained earnings or share issues. This limits the source of capital for co-operatives relative to traded corporations. This is an important issue where profitable opportunities for expansion exist.

Global Dairy intends to issue notes that can be traded in financial markets. The performance of these notes will reflect the financial market's assessment of both Global Dairy's past performance and its future prospects and thereby signal a wider set of views than those of the co-operative's management and board, or even of suppliers more generally. Valuation of the notes will provide some incentive for analysts to study and monitor Global Dairy.

The proposal allowing share-milker share ownership raises significant issues relating to the structure of shareholding.⁴ If milk from a farm is supplied partly by the farmer and partly by the share-milker the number of shareholders will increase and thus the incentive and individual resources to monitor Global Dairy performance will be even weaker. As about 45% of milk is currently being produced by share-milkers there could be a very significant increase in the number of shareholders.

Importantly, if ownership of milk were to become the basis of Global Dairy shareholding,⁵ this would provide a means by which concentrated shareholding could occur, to the benefit of the company. Suppose that farmers and share-milkers transferred their milk to a broker who then supplied it to Global Dairy. The broker – who could even be a farmer or share-milker – might acquire sufficient ownership rights to milk to create a large shareholding in the co-operative.

There are usually good reasons for particular ownership arrangements that emerge over time and this may be why share-milkers have not been permitted to hold shares in dairy co-operatives to date. Any farmer has a great deal of capital tied up in a dairy farm. (See Farm Dairy Conversion: Capital table.) Some of this capital is specific to dairy in the sense that

its value in any other use will be lower.⁶ In order to commit to specific investment the farmer will seek a long term contract that virtually guarantees its use. The farmer can obtain such a contract by owning shares in the local dairy co-operative. Alternatively, suppose that the farmer has no shares in the co-operative, but the share-milker does and the share-milker owns the cows. Because cows are mobile capital the farmer's dairy investment may be less secure. The outcome of contract negotiations between the farmer and share-milker will depend on the supply and demand of both sorts of capital. If share-milkers who own cows are readily available the farmer can be secure in investing in specific capital, but when they are not, there will be uncertainty. The open entry regime however removes uncertainty for farmers who have invested in dairy-specific capital even if they do not own Global Dairy shares.

In sum, the proposed Global Dairy organisational form will not solve all the governance issues that make large co-operatives less organisationally efficient than tradable corporates. World wide there is a mix of large co-operative and corporate dairy companies. A table of ownership is presented for information, however comparison is complicated by factors such as the tax advantages available to co-operatives in some countries.

1 Unless specifically differentiated according to factors such as transport cost and season.

2 This is not to say that farmers do not have an incentive to monitor the co-operative. The shareholding in a co-operative is likely to be a major investment for any individual farmer.

3 Although the Shareholders' Council oversees the valuation of the milk price, it is the open entry and exit regime that provides the incentive for Global Dairy to set the milk price at the optimal level. See 'The Discipline Of Open Entry and Exit', this issue.

4 Introducing share-milker shareholders has no implications for the act of unbundling the pay-out among milk, processing, distribution and marketing capital, or quota rents. Furthermore unbundling has no implications for share-milkers in that their existing contracts could be maintained. For example, the 50% share-milker contract that is based on the fully bundled pay-out could be maintained by a contract that allocated 50% of each element of the total pay-out to the share-milker.

5 That is, ownership of shares is not limited by some occupational definition, such as 'dairy farmer' and 'share-milker'.

6 Obviously the milking plant, vat (usually supplied by the co-operative), and aspects of the fencing will be specific to dairy farming. Less obviously, irrigation, while useful for other farming activities, may have its highest value use in dairying, and may not be economic for other purposes.

“In order to commit to specific investment the farmer will seek a long term contract that virtually guarantees its use.”

Farm Dairy Conversion: Capital

Development	\$	Per Kg Milk Solids
Irrigation	460,000	
Water supply	85,000	
Housing	200,000	
Effluent	18,000	
Dairy (60-bail rotary)	550,000	
Electricity	50,000	
Races & earthworks	100,000	
Fencing	30,000	
Fertiliser	40,000	
Re-grassing	80,000	
Contingencies	50,000	
Total Development	\$1,663,000	\$3.81
Shares in the Co-operative	\$1,748,000	\$4.00
Cows	\$1,750,000	\$4.00
Land	\$1,660,000	\$3.81
Total Capital	\$6,821,000	\$15.61

Source: Country-Wide, Northern Edition, March 2001

This table is for a hypothetical farm with the following characteristics:

- 415 hectare farm in the Canterbury area (\$4,000/ha)
- 1,400 cows (\$1,250 ea.): 437,000 kgMS after 3 years
- Co-operative shares are at \$4/kg of milk solids
- Two houses already on the property
- The farm already has some existing irrigation
- Two thirds of the farm has to be re-grassed

Points to note:

- Capital that is specific to dairy, as opposed to other farming, is difficult to estimate, but it is at least (effluent, dairy, races and earthworks, and cows) \$2,418,000
- The share of co-operative capital is 25% of total capital
- Assuming a payout of \$4.50/KgMS, that dairy is only just more profitable than other uses of the land (for a debate see Country-Wide, Northern Edition, April 2001) and that the farmer's cost of capital is 12% the cost structure is very approximately (in \$/kgMS)
 - 0.48 Processing/Distribution/Marketing: Co-operative capital Costs
 - 1.39 On-Farm Capital Costs
 - 2.63 On-Farm Operation Costs (wages etc)
 - 4.50 Total Costs (=Revenue)

World's Top Dairy Companies

World's Top Dairy Companies by Rank

World's Top Dairy Companies by Rank	Turnover (NZ\$M)#	Type of Company	Major Activities	Country of Origin
1 Nestlé*	31,162	Multinational company listed on the Swiss, London, Paris and Frankfurt bourses. 49% of shares are Swiss owned, 14% USA, 9% France, 9% UK, 8% Germany and 11% others	Diversified food products: dairy, coffee, mineral water, infant foods, chocolate and others	Switzerland
2 Dean Foods /Suiza	21,860	Publicly quoted company	Dairy processing and dairy products, plastic packaging	USA
3 Dairy Farmers of America	17,907	Co-operative with 24 000 members	Milk supply, production of cheese, butter and other dairy products	USA
4 Kraft	15,349	Subsidiary of Phillip Morris (cigarette maker)	Foods business: cheese and others	USA
5 Parmalat	14,419	International public company	Dairy and other food products	Italy
6 Arla Foods	13,023	Co-operative with 17,000 members	Dairy products	Denmark
7 Lactails	12,326	Family owned	Dairy products	France
8 Global Dairy	12,100	Co-operative	Dairy processing and marketing	New Zealand
9 Campina Melkunie	12,093	Co-operative with 8,000 producer members. Voting rights are in proportion to the quantity of milk supplied.	Dairy foods	Netherlands
10 Snow Brand	11,395	Public company	Milk products	Japan
11 Unilever*	10,930	Joint venture between Unilever NV & Unilever PLC (both public)	Packaged and consumer goods	UK
12 Friesland Coberco	10,465	Public and international	Company branded dairy products	Netherlands

Sources: Mafekeni MA Thesis and Promar International Draft Report. * These results are for the dairy turnover of these companies. # based on NZ\$1 = US\$.43

A Market is Born

The regulatory framework will impose some specific requirements relating to the wholesale milk market. Although there will be no regulatory requirement for Global Dairy to develop such a market, Global Dairy has incentives to do just that.¹ A number of the proposed regulations should be interpreted in this light.

To get an indication of how the wholesale market could operate in New Zealand, one only needs to look at the New York Mercantile Exchange in the United States, where milk is traded in volumes.

A wholesale milk market consists of a variety of contracts for the sale and purchase of raw milk. Sub markets, such as spot and futures markets, may also be formed. The sub markets are categorised according to the terms of the contract. In the spot market, for example, the contracts will be for the sale of goods today, whereas in the futures market the contracts will be for delivery of milk at some future date. There will be an intimate connection between the wholesale market and open entry and exit from Global Dairy, because if there is a spot market for milk any supplier or processor can buy or sell milk on the spot market.

Potential participants in a wholesale milk market include small specific-purpose processors like supermarkets who do not have their own suppliers and would use the wholesale market to sell their own product labels. Established processors who have their own suppliers, such as Tatua and Westland, could use the wholesale market to balance surpluses and shortfalls in supply that may arise from climatic conditions. New entrants to the market, both processors and suppliers, could also use the wholesale market. A futures element of the wholesale market would also attract traders (‘scalpers’) who would try and predict movements in the market and never actually settle with the physical supply of milk.

To date, the development of the wholesale market has been inhibited by the vertically integrated structure of the industry (co-operative ownership). However Global Dairy may have the incentive to offer wholesale market services – such as the prices at which it will buy and sell milk – to show that it is not exploiting its dominant market position in violation of the Commerce Act. In addition, the wholesale market may provide Global Dairy with more information about factors that influence the milk price and thus assist in setting the milk price to suppliers.

A wholesale milk market will also discipline Global Dairy by the opportunity for arbitrage it offers. Unless Global Dairy sets buy and sell wholesale prices that accurately reflect the costs of supply and demand, it could be commercially damaged by the resultant transactions.

The unbundled annual price for its milk may differ from the wholesale spot price for a number of reasons. The most obvious example is that per-period contracts for fixed amounts of milk will be at a higher price than the spot price. This is because the per-period contract provides certainty over the quantity that will be delivered for the purchaser and any seasonal or other factors that may cause uncertainty of supply are borne by the supplier.

These legitimate differences in prices have implications for regulatory enforcement. The proposed entry and exit regulations must be interpreted within the context of the development of the broader wholesale market. And because the spot price in a wholesale market will vary for a number of reasons, the enforcement body should have the expertise to understand the dynamics of a wholesale milk market.

¹ Global Dairy will be required under regulation to publish a wholesale milk price.

“To get an indication of how the wholesale market could operate in New Zealand, one only needs to look at the New York Mercantile Exchange in the United States, where milk is traded in volumes.”

Regulating Global Dairy

“A good regulatory regime is one that is confined to monitoring process rather than one that specifies defined outcomes.”

The dairy industry merger includes provision for regulation aimed at limiting the potential for Global Dairy to use its market power in the wide range of markets for dairy products in New Zealand. It is the virtual monopsony position of Global Dairy as the purchaser of raw milk that is the source of Global Dairy’s market power and there would be no obvious benefit from imposing these regulations on other companies in the New Zealand dairy industry.

A good regulatory regime is one that is confined to monitoring process rather than one that specifies defined outcomes. This is because in specifying defined outcomes the writers of the regulations must fully anticipate all future contingencies that might arise. Since it is impossible to accurately predict the future, regulations that specify outcomes are bound to be either unworkable or produce unintended consequences in the future.

Regulating for specific outcomes, for example by defining the actual calculation of the price of milk, also requires very heavy regulation which may adversely affect the performance of Global Dairy. Of course monitoring for process rather than for breaches of specific outcomes requires judgement in enforcement, which means that the regulatory body will need to have the expertise to undertake this role.

The regulatory environment planned by government is to first ensure open entry and exit¹ by suppliers (as shareholders and potential shareholders of Global Dairy) and promote the efficient operation of markets for raw milk and other products and services controlled by Global Dairy.

The regulation of Global Dairy can be divided into the following categories:

- Monitoring the behaviour of Global Dairy
- Resolving disputes that may arise
- Sanctioning breaches of regulations

In designing a regulatory framework, cost effectiveness is more likely to be achieved when there are strong incentives for interested parties to monitor and report alleged breaches to a regulatory body. In this way the regulatory body is much less likely to be ‘captured’ by the monitored party. Further, the regulatory body is required only to resolve disputes and impose sanctions.

Under the new dairy industry structure, potential and existing Global Dairy shareholders will be transacting commercially with Global Dairy so they will have every incentive to report disputes to the regulatory body for resolution. Similarly, parties to actual and potential contracts with Global Dairy in the wholesale spot and contract market in milk will have an incentive to report disputes. Thus enforcement can be reactive to complaints, rather than proactive in initiating investigations.

It must be recognised however that Global Dairy will have access to financial resources and information that will exceed that of almost all potential claimants under the regulations. This raises the potential for complaints to be resolved in Global Dairy’s favour due simply to the disparity of resourcing. This needs to be taken into consideration in determining the mechanism by which disputes are resolved. For example, it is unlikely that disputes can be resolved satisfactorily when regulatory enforcement is in the hands of the courts, because this mechanism relies on claimants’ own recognition and resources to take up alleged breaches.

Various enforcement mechanisms, other than relying on the courts, might be contemplated. These include the proposal for a Milk Commissioner appointed by Global Dairy’s Shareholders’ Council, an independent Milk Market Enforcement Panel, and the Commerce Commission.

A Milk Commissioner appointed by Global Dairy's Shareholders' Council is an unsatisfactory option because the position will be a creature of existing suppliers, not potential suppliers or processors, therefore it cannot be credibly capture free. However, the Milk Commissioner may usefully assist the settlement of contractual disputes involving Global Dairy before disputes reach the enforcement body.

Other options include a specialist Milk Market Enforcement Panel or the Commerce Commission as final arbiters of contract disputes with Global Dairy. There are a number of issues that would need to be addressed if the Commerce Commission were appointed as regulators:

- While decisions of the enforcement body relating to market making must be within the Commerce Act, much judgement is called upon in assessing departures from the Act. To put these decisions with the competition law watchdog, the Commerce Commission may inhibit the development of the milk market.
- Unless the enforcement body of the Commerce Commission retains a constant membership, the body may lack the necessary accumulation of expertise, experience and consistency.
- Because the government has sanctioned a merger that the Commerce Commission would not have allowed, the Commerce Commission may be put in the position of enforcing regulations that represent, in part, behavioural undertakings by Global Dairy that the Commerce Commission itself would not have accepted.
- Although resolving disputes should be a fundamental part of the role of the enforcement body, the Commerce Commission per se does not deal with dispute resolution. In its current role it deals only with investigating, sanctioning and defending its decisions in respect of the Commerce Act (although the proposal for the Telecommunications

Commissioner, affiliated to the Commerce Commission, will have a dispute resolution role).

- The Commerce Commission has enforced structured undertakings (for example, divestment of part of a company in a merger application) but not behavioural undertakings.

The Commerce Commission would be the obvious body to assess when the market share threshold for removal of specific regulation of Global Dairy has been reached. However, if the Commerce Commission is also the regulator it arguably has an incentive to retain the regulations in its own interest. This suggests that the Commerce Commission should not also be the regulator if it is to adjudicate on the 'bright line' test.²

An independent Milk Market Enforcement Panel, sitting outside the Commerce Commission and modelled after the equivalent in the New Zealand electricity market, could provide expertise and the judgement required in a developing market. It would also be cost effective as it would only meet to determine disputes and, being part-time without a monitoring role, would not be unduly subject to capture.

¹ See "What Does Open Entry to and Exit from Global Dairy Mean?" this issue.

² Although the test is 'bright line' there may well be judgement to be made at the margin – judgement on which substantial financial decisions hinge.

“An independent Milk Market Enforcement panel, sitting outside the Commerce Commission and modelled after the equivalent in the New Zealand electricity market, could provide expertise and the judgement required in a developing market.”

The Market for Genetic Information in the Dairy Industry

”Genetic improvement of the herd is critical to the development of the New Zealand dairy industry.”

The merger of the New Zealand Dairy Board and New Zealand’s two largest co-operative manufacturers of milk products will result in the transfer of most NZDB assets and functions into a pure private commercial operation. All of the public good activities of NZDB will therefore need to be reconsidered.¹

Genetic improvement of the herd is critical to the development of the New Zealand dairy industry. At the time of writing the Livestock Improvement Corporation (LIC) is a wholly-owned subsidiary of NZDB. It is responsible for implementing the Dairy Herd Improvement Plan for genetic improvement in the dairy herd.²

LIC also manages, operates and develops the National Dairy Herd Improvement Database, together with commercial businesses that contribute to or utilise the database such as:

- MINDA provides advisory and administrative support to farmers and maintains herd records in the database.
- The Herd Testing Service collects and tests milk for specific characteristics and records data.
- The Artificial Breeding Service maintains bull statistics and manages semen processing.
- Breeding/Sire Selection Service manages the sire proving scheme and DNA testing.

Clearly the creation of Global Dairy raises a number of issues relating to the ownership, structure and management of the National Dairy Herd Improvement Database and of LIC as it has both commercial and database management activities.

There are strong analogies to problems in network economics, where there is a core facility that provides a range of services to consumers. In this case the core facility has the

following combination of characteristics which for the purposes of this paper we refer to as public externalities:

- It would be inefficient for any firm to duplicate the facility
- A public good (information) characteristic, whereby use of the facility by one party does not reduce the value of the facility to other parties. While users can be excluded from the database, exclusionary use may well carry social costs
- A positive network externality in that the addition of users (individual farmer data) increases the value of the database for any other user.

Where strong externality elements are present the industry should take these into account. The optimal governance (ownership) and regulatory regime for the elements of the network that display natural monopoly and public good characteristics will differ from those elements of the network that do not display these characteristics. It is not in the public interest to establish a regulated monopoly in those areas of the network that are susceptible to competition. However it may be inefficient to provide for unregulated private ownership of a facility with natural monopoly and public good features.

The potential inefficiencies that may arise from private commercial ownership of a natural monopoly or public good facility could be alleviated by an ownership structure that involves decision-making by all potential users. This would ensure that decisions about access to the facility maximise potential benefits to all users, resolving the hold-up and monopoly pricing problems associated with a natural monopoly. It also provides a mechanism for alleviating the commercial and pricing

problems associated with the non-rival component of the use of the data. A co-operative in which all farmers and share-milkers, who are potential users of the data are members, would provide an ownership structure that approximated efficiency in these circumstances.

At the time of writing supplying farmers, through NZDB, control LIC but LIC provides services to share-milkers as well as farmers. Share-milkers take up 41% of LIC services. The proposal is for LIC to be owned by its users based on their historical pattern of use (and this includes share-milkers and suppliers). In the absence of specified ownership, arguments about the ownership of LIC must rest on understandings about the property rights stemming from the evolution of LIC from its antecedents, and the public good characteristics of LIC's activities. However a key issue with trusts, co-operatives and mutual companies is that ownership is not sufficiently tight to provide clear entitlement to their assets.

If those elements of the database that have public externalities can be defined, then it will not be in the public interest to allocate these to private entities for their exclusive use. It will be in the public interest to enable these public good externalities to be utilised through regulation, or separation of the database management function, providing there are incentives and resources for the maintenance and development of the database.

In the case of the National Dairy Herd Database there is a clear separation between the public good and proprietary aspects. The public good aspect of the database comprises all the records associated with the identification (including location), lineage and performance of individual animals together with the software and architecture that are used to manage and display the records. The proprietary aspect of the database is all of those records relating to the interpretation of the data, including the Breeding Worth (BW) calculations undertaken by LIC to value animals and the information systems used to conduct

the business of the different commercial activities of LIC (including herd testing, artificial breeding, and dairy farm consultancy).³ In short the core public good elements of the database are the records providing the information about individual animals required for bio-security and commercial activities. It does not include the data derived from analysis of the information about individual animals.

As a test of this approach, consider the calculation of breeding worth. Breeding worth is an interpretation of the data, not a component of the data itself. Different organisations will legitimately have different views about how to calculate breeding worth. These alternative views form the key component of potential efficiency-enhancing competition in the market for advice about breeding worth.

In some cases judgement will be required about what is a pure commercial activity and what is part of the public good database. For example, aspects of MINDA facilitate genetic research by providing for the identification of animals and the verification of ancestry. In this sense MINDA represents the type of public good enhancement of basic data in which any stand alone (co-operative) owner or manager of the database should invest, but other aspects of MINDA may be commercial. However the need for judgement about the separation of commercial and public good aspects of the data does not undermine the view that this separation can and should be achieved.

The key issues posed by the existence of a public good database are access and the interaction between the database and any commercial activities. The Macdonald Committee Report in the early 1990s noted a conflict of interest with LIC being both custodian of the database and manager of commercial activities utilising the database. At the time of writing the structure of LIC raises a number of issues.

- The National Herd Improvement Programme (NHIP), developed through LIC, has a particular view about dairy animal attributes that contribute to herd

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“Even though the database is public good in nature, there must be incentives for further development of the database and other potential databases in the future.”

improvement. However competing views about how to implement a herd improvement strategy would bring the benefits of diversity and competition.

- Substantial transfers of intellectual property may occur where LIC has an opportunity to view the data access requests of other organisations that compete with it on a commercial basis.
- There is the potential for LIC to cross-subsidise different parts of its operations to its own benefit and the detriment of its competitors. While this may be mitigated by open access to the database, it will require enforcement of appropriate access prices. This is traditionally very difficult for a regulator dealing with a vertically integrated company that holds all the relevant information.
- There would be a conflict of interest if LIC were to become a regulator as well as maintaining its commercial activities.
- It is only because LIC undertakes commercial activities that a separate Dairy Herd Improvement Tribunal is required to deal with access issues. This increases transactions costs and inhibits the freedom of the management of the database, which would not occur with a public good database.

Separation of the commercial and public good aspects of LIC could be structural – through regulation of the scope of the business – or behavioural – through regulation of pricing and contracts. Structural separation could be achieved by separating LIC’s commercial activities or by transferring the database to another entity. Structural separation is costly at the time of separation but is likely to result in superior performance and carry lower ongoing costs of monitoring than regulatory separation. If the principles on which access to the database were enshrined in the constitution of the entity managing it, and there were no commercial conflicts of interest, there would be no need for special-purpose regulatory oversight. Reliance could be placed upon remedies under the

Commerce Act and the incentives of the owners.

Even though the database is public good in nature, there must be incentives for further development of the database and other potential databases in the future. Knowledge of the synergies between the uses of the data and data provision would also facilitate the development of databases. Some general points can be made.

- Co-operative ownership would assist data acquisition because the benefit from use is linked to data supply. It could be strengthened by insisting that usage of the database implies a requirement to supply data.
- Licensing of those who routinely gather data for the database (for example the Herd Testing Service) cannot be the responsibility of database management unless the database is a separate entity with no commercial functions. This highlights the problem faced by the current vertically-integrated structure that has NZDB ownership of both LIC and its herd-testing functions.
- The advent of electronic means of data transfer should reduce the cost of transferring data and enable relatively efficient contracts for the acquisition of data from the database without the requirement of vertically integrated ownership. Allocating the responsibility for licensing herd testers to the database management should reduce, if not eliminate, incentives for the emergence of duplicate proprietary databases, even for Global Dairy.
- While credible arguments can be mounted for co-operative ownership of the database and other aspects of the dairy industry, these arguments are not present with respect to service providers such as herd testers and farm advisers. There are organisational-performance advantages in separating the database from these service provider activities, providing efficient database access

contracts can be designed and made available in conjunction with licensing.

- Structural separation would leave the database management free to choose its pricing strategies, subject to obligations implied by its constitution, requirements of the Commerce Act, and the ability for data to be supplied by relevant data users. Because the database manager would report to a board representing users of the database, and since raising the cost of access to the database will simply raise the costs of the services and innovations provided to farmers by using the database, there would be no major incentive problems associated with the pricing of access under this structure.

It is difficult to think of any situation in which exclusive access to elements of the database would be in the public interest. Use of the database can be proprietary and exclusive even if the data in the database are not, because the processes applied to the data will be proprietary. If there is innovation that suggests that other data should be collected, and a private database (potentially) evolves to do so, the management of the database still has the option of seeking to purchase the process if it would like to provide it as a public good or deems that it should be acquired for bio-security reasons. Indeed, Industry Good Inc. will have an important role to play in the innovations and research it purchases. It should influence the actions of the database management, even if separate from that management, and we can expect investment in the database without exclusive contracts.

Further, imagine situations in which a research company would require a guarantee of ongoing access to bear the set-up costs of undertaking a major research project but ongoing access does not require exclusive use. So long as it is possible for any research organisation to retain the proprietary results of the research that it undertakes, it is difficult to think of examples where exclusive access as opposed to ongoing access would be efficiency enhancing.

Under open access to the database the profit from successful proprietary research that used the data will lie where the innovation lies.

Even if there are benefits to exclusive access contracts, there appear to be a substantial range of risks associated with the writing of such contracts. In the field of scientific discovery it is extremely difficult to anticipate what future research potential and what future lines of research may be valuable for the industry. Exclusive contracts would preclude contestability in scientific research (when there is evidence that even in New Zealand there are enough organisations with capacity in genomic research to make contestability a reality), reduce the range of uses to which the data can be put, and hence may foreclose other proprietary and public good innovations that would otherwise take place. Exclusive access to the data would also preclude independent and contestable verification of the results obtained by one research organisation. Finally, exclusive access to data that may at some point in the future prove to be critical for commercial success in the dairy industry could, if exclusive access was provided to Global Dairy, create a barrier to entry in other parts of the dairy industry.

The issues raised here warrant careful consideration. It may be that the greatest value from the commercial operations of LIC can be achieved by spinning them off to the market. This would create the opportunity for LIC to focus on realising the huge gains to the dairy industry that can be achieved through open access to contestable genomic research utilising the database.

¹ Further where NZDB had a regulatory function this will also need to be reconsidered due to a conflict of interest in respect of competitors and potential competitors of Global Dairy.

² The plan uses performance and breeding information to increase the efficiency of the dairy industry. This plan has a long history; it was agreed between the Government and the NZDB in 1939 and operated with joint government funding until 1992. When LIC was formed in 1988 the Dairy Herd Improvement Plan became the strategic plan of LIC.

³ Conceptually there is no basis on which to draw a 'bright line' between data and the applications that use data, because even the selection and creation of variables that become data in the database require the application of theory and concepts. Nevertheless, a line can be drawn based upon judgement that might include treating as data for ongoing maintenance at least the information that has been acquired to the present day.

“It may be that the greatest value from the commercial operations of LIC can be achieved by spinning them off to the market.”

Does The New Zealand Dairy Industry Have Market Power in Foreign Markets?

EU and USA Comparison

EU

- Imported goods enter market on same terms and conditions as domestic production.
- New Zealand has the property rights on the quota.
- Extent of market is determined by the supply cost of domestic production and the total amount of quota.
- Higher price for New Zealand exporters resulting from higher general dairy-price level from quota.

USA

- Importers are allocated country quota. The USA has the property rights on the quota.
- New Zealand exporters must negotiate with importers so may not gain from higher price levels.
- 'Weak-selling' may have some effect on returns to New Zealand dairy suppliers.

The statutory position of the New Zealand Dairy Board had been justified on the grounds that the aggregation of New Zealand dairy products for foreign distribution, marketing and sale gave New Zealand market power in foreign markets. This market power creates a higher return to New Zealand dairy farmers and thereby the nation. However what constitutes 'market power' needs to be determined in order to assess any claim that New Zealand is better off with a single dairy exporter.

A firm has market power if it can raise its price in a market simply by restricting supply to that market, but in practice this is difficult to verify. Competition authorities adopt a number of tests for market power. Under one test, a firm is said to have market power if it can sustain a 5% price rise for one year. However it is the nature and timing of the response of actual or potential competitors to the raised price or reduced supply that is more important in determining the existence of market power. Moreover the veracity of the test relies on the assumption that actual or potential competitors produce and sell essentially the same product. Clearly prices may differ across firms because their products differ and this does not imply that market power exists, or that excess profits are being made. Firms typically invest in product differentiation in an attempt to establish a distinct market for themselves and competition in product differentiation may ensure that no more than normal profits are being achieved, at least over the long term.

Competition authorities sometimes adopt market share as a test of market power but this can also be misleading. Although a low market share strongly indicates a lack of market power, a high market share does not necessarily mean

that a firm has market power. Again, what is important is the reaction of actual and potential competitors if prices are raised. In some circumstances competitors can react quickly and limit the effects of any price rise even if their market share is very low.

Measuring market share is difficult. It requires accurate data and reliable estimation techniques. Even in circumstances where there is a lot of data, for example supermarket products where large quantities are sold and prices are measured electronically, results can vary according to the techniques used and the definition of the market. The broader the market definition the less likely market power will be observed. For example, sales of a particular brand of yoghurt may dominate when measured as a proportion of yoghurt sales, but not as a proportion of dairy dessert sales.

Obviously NZDB could only have market power in its foreign markets if it has a reasonable market share in those markets. Although it has had a significant market share in the international trade of dairy products – greater than 30% – this does not imply that it has a large share of world production or in any particular market. In fact, dairy products are typically consumed in the country in which they are produced and hence world dairy trade is very small relative to world dairy production.

The table shows that New Zealand dairy products form a very small proportion of the dairy imports in many countries and imports of dairy products are often small compared to domestic production. Further, the variation in market share over time indicates that there is not the stability one would expect as a consequence of market power. Thus a crude market share

analysis suggests that NZDB's has achieved very little market power in its foreign markets.

A seemingly more sophisticated argument in justification of a single exporter is that even though it may not have a substantial market share in foreign markets, it can substitute product between markets according to market demand. What's more, it does not have to compete with other New Zealand exporters in foreign markets – the so-called case of 'weak selling'.

The weak selling argument can only arise in cases where the relevant market segment has limited sellers. It can occur where sellers are limited by statutes that restrict entry (see the case of the USA in the EU and USA Comparison).

The claim by NZIER (Report Prepared for NZDB, 1998) that monopsony purchase confers special abilities to allocate product to markets in order to maximize returns to dairy exports is not defensible. In fact, any exporting entity would adopt the same strategy. Moreover, even if NZDB has had a positive margin in its foreign markets this does not of itself represent market power. Many countries restrict entry to their markets to maintain high prices for their suppliers. Thus a quota allocation to NZDB simply confers a right to sell a certain amount in a market with an arti-

cially high price. It does not imply that NZDB has market power in that market. Indeed there may be vigorous competition at that price. It is access to the market that generates the returns and this is the only situation where 'weak selling' will be an issue. Whether the exporting country enjoys fully the higher prices depends upon how quotas are administered in the importing country.

This is not to deny that in certain cases, perhaps as the result of intellectual property investments in the past, New Zealand may enjoy returns that exceeds that of other countries' exports. Such returns are the return to successful and unsuccessful past investment and they rest with the intellectual property holder. They do not represent market power per se.

In conclusion, the evidence indicates that NZDB has not had market power in its foreign markets and there is no compelling reason to maintain a single exporter of dairy exports on the basis that it will have market power in foreign markets in the future. The creation of Global Dairy as a monopsony purchaser of raw milk will not confer on it any more market power in foreign markets than it did on its predecessor.

**Percentage Share of New Zealand Dairy Exports on Dairy Imports in 1996
And the Minimum and Maximum Percentage Shares 1986-1996**

Country	1996	Min	Max	Country	1996	Min	Max	Country	1996	Min	Max
Belgium	2.45	0.05	2.45	Oman	0	0	5	Singapore	8	6	18
Denmark	1.1	0.01	1.1	Qatar	0	0	4.25	Sri Lanka	0	0	55
France	0.02	0	0.34	Algeria	0	0	24	Thailand	0	0	26
Germany	0.04	0.01	0.18	Senegal	0	0	7.5	Argentina	25	0	25
Greece	0	0	0.07	South Africa	0	0	9.8	Barbados	38	25	38
Italy	0.02	0	0.03	Tunisia	11.5	0	11.5	Brazil	0	0	13
Netherlands	0.8	0.4	1.4	Brunei	0	0	5.4	Colombia	0	0	35
Portugal	1	0	28	Fiji	0	0	75	Costa Rica	0	0	1
Spain	0.3	0.07	0.42	Kiribati	0	0	14	Ecuador	12	0	76
Sweden	0	0	0.4	P.N.G.	0	0	13	Guatemala	45	3	65
UK	16	10	18	Vanuatu	0	0	40	Honduras	0	0	13.8
Switzerland	0.5	0	0.5	China	2	0	34	Jamaica	0	0	30
Poland	0	0	25.5	Hong Kong	11.5	2	11.5	Mexico	0	0	23.5
Bahrain	0	0	9.5	India	0	0	45	Nicaragua	8	0	85
Cypruss	0	0	11	Indonesia	37	20	42	Panama	0	0	57
Egypt	22	2	22	Korea Rep.	11	3	16	Venezuela	0	0	79
Jordan	0	0	40	Mauritius	0	0	17	Canada	10	3	10
Kuwait	0	0	16	Philippines	22	16	32	Japan	22	10	22
Malta	0	0	6	USA	10	6.2	10				

Global Dairy and Competition Law

“The rationale for change in the structure of the dairy industry presented in the Global Dairy proposal proved to be more convincing than the arguments presented in 1999.”

The farmers’ vote creating Global Dairy will result in a company with over 90% of the market for the purchase of raw milk and for the manufacture of processed dairy products in New Zealand. From the perspective of competition law there are three features of the merger process that are particularly noteworthy:

- The proposal was not assessed by the Commerce Commission whose function it is to consider whether mergers are consistent with the preservation of economic efficiency in markets, and if they are not, to prevent them going ahead.
- The vote has created a company whose market share is substantially in excess of the safe harbours normally applied by the Commerce Commission, and comes at a time when the government has moved to strengthen the terms of the Commerce Act by focussing the assessment of merger proposals on market power rather than dominance.
- Implementing the merger requires the removal of the existing regulatory structure and new regulations relating to competition and the conduct of Global Dairy in dairy markets.

The approach taken by the Commerce Commission to the analysis of a merger is to first consider whether a dominant position is likely to be created or strengthened.¹ To make this assessment, the Commerce Commission considers whether, in the relevant markets, the merged entity will be constrained from raising prices above or reducing output below the competitive level by:

- rivalry within the market;
- constraints imposed by the threat of entry; and / or

- constraints imposed by buyers or suppliers.

If it finds that dominance is likely, then the merger can only be authorised if the public benefits from the merger outweigh the public detriments. The Commerce Commission considers both the performance of and benefits to New Zealand producers and consumers in its deliberations.

In its draft determination on the dairy industry Mega-Merger proposal of 1999, the Commerce Commission took the view that efficiency losses substantially outweighed the efficiency gains arising from the new structure.² In their view, efficiency losses in the domestic market would be small by comparison with the large productive and dynamic efficiency losses resulting from the absence of competitive pressure on those aspects of the merged entity that would not be subject to direct competition in international markets. In short, an absence of domestic processing competition.

The rationale for change in the structure of the dairy industry presented in the Global Dairy proposal proved to be more convincing than the arguments presented in 1999. It was argued that although the New Zealand Dairy Board may have been an effective way to maximise the returns from international marketing when there were 500 dairy co-operatives, the structure was no longer efficient in 2001 when a large part of the dairy manufacturing industry was controlled by two co-operatives. The proposal further suggested that the costs of splitting the operations of NZDB between two competing companies were so high that a merger of the two large co-operatives with NZDB provided the only practical means of achieving vertical integration in the industry.

The creation of Global Dairy raises at least four other issues that represent legitimate questions for competition policy in New Zealand.

First, is the threshold and other criteria used for intervention in other (much) larger economies relevant to New Zealand? In those industries where there are strong economies of scale, and where vertical integration is the efficient form of production, the New Zealand market may be so small as to preclude international competitiveness except at high domestic market shares. Applying the criteria for mergers used by other countries may reduce the scope for firms that are large by international standards to emerge through takeovers within the domestic market.³

For some firms it may be possible to take advantage of economies of scale and scope by expanding outside New Zealand. To do this however, requires that the firms have some production or management technology that is superior to those of existing firms in other countries. This may or may not be the source of the economies of scale that drive merger proposals within the domestic market.

Second, in evaluating merger proposals the Commerce Commission estimates the costs and benefits to New Zealand consumers and producers. For export industries the benefits of a merger include the increased profit to producers arising from export sales that arise from the merger. Any benefits to foreign consumers are ignored. Any extra profits to exporters represent extra value added generated by the merger that may be utilised in various ways by New Zealand residents for their benefit. For export industries the issue may come down to trading off costs to the domestic market against benefits from better exporting performance. For large export industries very small benefits to exporting may be all that is required to offset any detriments to the domestic market. In the domestic market the creation of Global Dairy means a move from duopoly and small competing firms to monopoly and small competing firms.

Third, Global Dairy is a producer co-

operative. Co-operative ownership does nothing to reduce concerns about the exercise of market power in respect of consumers of milk products, but (provided that there is open entry to and exit from the co-operative) it does remove the prospect that Global Dairy can exercise market power in the market for raw milk. In respect of a producer co-operative that exports virtually all of its output, should the Commerce Commission have a role in assessing the co-operative's productive efficiency in the purchase of raw milk and the manufacture of dairy products? Such a role amounts to no more than a check on the rationality of suppliers and the assessments they make as the co-operative's owners.

Fourth, the proposal to divest Dairy Foods to provide competition in the domestic retail market does nothing to reduce concerns resulting from the fact that Dairy Foods will be reliant on Global Dairy for supplies of raw milk and some milk products. These concerns can probably only be met by behavioural undertakings from Global Dairy of the type that will be embodied in government regulations, although there exist small dairy product producers now and there may be entry of downstream users of dairy processing – such as supermarket companies – into raw milk processing. Additionally, the potential to import dairy products, including even fresh milk based products, provides some market discipline on final dairy product prices to New Zealand consumers.

The Commerce Commission is concerned only with behaviour that might contravene The Commerce Act; it does not accept behavioural undertakings from merged entities, so structural solutions (such as divestment of certain parts of the business) provide the only approach available to meet the Commerce Commission's concerns about the merger. If a merger raises concerns about lessening of competition that could be alleviated by behavioural undertakings, such undertakings must be embodied in legislation or related regulations. In such cases, the merger must be considered by government rather than by the Commerce Commission.

“If a merger raises concerns about lessening of competition ... [then] the merger must be considered by government rather than by the Commerce Commission.”

“ ... the creation of Global Dairy will allow full deregulation of dairy product exports to take place with minimal prospect of dislocation, while preserving the opportunity for Global Dairy to evolve over time in response to competitive forces.”

In the case of Global Dairy, the highly regulated structure of the dairy industry has also affected the choice between Commerce Commission and government assessment of the merger. It is likely that full vertical integration of manufacturing and processing would have emerged long ago in the absence of the legislation creating an export monopoly for NZDB. At the same time, certain types of competition (such as from multinational milk processors and marketers) have been precluded by the regulations. Bypassing the Commerce Commission therefore needs to be viewed as part of a legislative package designed to deregulate the industry, create a vertically integrated firm of international scale, and impose behavioural restrictions on that firm over the period in which new competition emerges in the deregulated environment.

There are precedents for the creation of entities with very large market shares without reference to the Commerce Commission, and for the approval of mergers with very high market shares. For example, when the government re-established the Accident Compensation Corporation (ACC) as a state monopoly provider of workplace accident compensation services, the Commerce Commission was neither asked to authorise nor assess the efficiency of the move.

The Commerce Commission declined to authorise Southern Cross' acquisition of Aetna on the grounds that Southern Cross would acquire a near 80% share of the health insurance market and that there are barriers to the entry of competitors. The High Court allowed an appeal from the Commerce Commission's decision on the grounds that substantial market share alone is not sufficient to provide for dominance in the presence of low barriers to entry. The Court found that the barriers to entry are low in the health insurance market and that in response to higher prices other insurers could take advantage of economies of scope and scale from their existing businesses to enter the market.

When the government privatised Telecom Corporation of New Zealand (Telecom), an

entity was created with extremely high market shares in New Zealand telecommunications markets without reference to the Commerce Commission. Global Dairy is like Telecom in being subject to competition law and certain additional behavioural regulations from its creation.⁴ Perhaps more importantly Global Dairy, like Telecom, will be operating in markets that are contestable.

In the case of the privatisation of Telecom, the order and pace of change was carefully considered to ensure that a dislocation in performance did not arise as a result of restructuring occurring simultaneously with deregulation.

The relationship between NZDB and the two large co-operatives is informal and implicit in many respects. Moving to a more formal separate structure will be a major exercise that would be best contemplated at some time other than when deregulation occurs. Global Dairy allows 'business as usual' to continue at the same time that deregulation of the industry takes place and export competition is introduced.

Telecom was privatised after first being a state-owned enterprise and New Zealand Post's market was deregulated after it had time to develop as a business. In the same way the creation of Global Dairy will allow full deregulation of dairy product exports to take place with minimal prospect of dislocation, while preserving the opportunity for Global Dairy to evolve over time in response to competitive forces.

The need to remove the regulations that have determined the past structure of the New Zealand dairy industry, and the need to impose behavioural undertakings on Global Dairy while competition emerges in the deregulated environment, make the Global Dairy merger look more like the privatisation of Telecom, the removal of private delivery of accident compensation insurance, and the deregulation of New Zealand Post, than merger proposals that are normally considered by the Commerce Commission. Mergers that require major (de)regulation are not necessarily best considered by the Commerce Commission.

1 Commerce Commission (1996) 'Business Acquisition Guidelines' Wellington. Amendments to the Commerce Act passed in May 2001 will result in the test being whether the merger is likely to substantially lessen competition in a market. For commentary see David, Grant (2001) 'The Change to the Business Acquisition Regime' paper presented at the IIR Competition Law Conference (Wellington) 24 May.

2 For a summary see Quigley, Neil (2001) 'Evaluation of the December 2000 Dairy Industry Merger Package From the Perspective of Competition Policy' (A report for the Ministry of Agriculture and Forestry) 11 January.

3 Firms may grow 'organically' and displace other firms but takeovers are the most common method by which large market shares are acquired.

4 In the case of Telecom the behavioural regulation was incorporated in the Kiwi Share.

Requiem for the Dairy Board

The statutory export monopoly of the New Zealand Dairy Board may have made economic sense in the past by reducing the cost of foreign marketing for a large number of small co-operatives, but this argument has long since lost its validity in the process of merger and acquisition that has reduced 499 processing co-operatives in 1933 to two large and two small co-operatives and the NZDB by the turn of the century.

The NZDB has had the role of co-ordinating the production, marketing and timely delivery of commodity dairy products. It was also required to be responsive to foreign consumer demand for new dairy products. Up until the merger that created Global Dairy from the two largest processing co-operatives and the NZDB, the NZDB was co-operatively owned by the four processors but no one processing co-operative had control of its management or strategic direction. NZDB negotiated the allocation of processing among the co-operatives and the co-operatives competed with each other for the most profitable products. This means that NZDB's product allocation decisions were not based solely on efficiency criteria but also took account of the political economy issues that arose as a result of co-operative ownership. This inevitably contributed to delays and non-performance that was ultimately reflected in the earnings from the NZDB's foreign customers.

The two largest dairy co-operatives, Kiwi Dairies and New Zealand Dairy Group, and the NZDB itself made separate investments in the dairy industries of other countries prior to the merger, giving the New Zealand co-operatives the ability to market and distribute their processed products through entities in foreign countries in competition with NZDB. This investment in foreign markets created mixed incentives for the co-operatives as owners of NZDB and increased the co-ordination costs of doing business.

These investments may have been made to facilitate growth that was limited by the New Zealand market and the constraints of NZDB, or in preparation for the demise of NZDB (since without an overseas presence the co-operatives would have had limited opportunities for establishing themselves in and learning about overseas markets preparatory to deeper involvement). Foreign investment by either co-operative may also have been part of a strategy to compete for NZDB on its demise. If this was the case, the 'investment race' was a risky one for shareholders. Whatever the case, the investment of the co-operatives and NZDB in foreign dairy entities suggests that they saw, in the presence of NZDB, limited benefits in a co-ordinated approach to foreign markets by New Zealand dairy co-operatives. This in turn offers limited support for the view that single-desk selling has negligible market power benefits to New Zealand.

The core of Global Dairy's strategy is to improve processing, marketing and distribution of dairy products in foreign markets and to develop its ownership of dairy businesses in those markets to add value for their New Zealand shareholders. It is a strategy that says that the New Zealand dairy industry has the technology to manage businesses in any country, and that the New Zealand dairy industry has some comparative advantage in processing, distribution and marketing.

New Zealand's traditional comparative advantage has been considered to lie in milk production rather than in processing. The claims for comparative advantage from processing and marketing are difficult to evaluate, for although the New Zealand dairy industry has been innovative, the strategy of the large co-operatives has been the production of commodity milk products at low cost and less in developing and marketing innovative high-value products.

“The core of Global Dairy's strategy is to improve processing, marketing and distribution of dairy products in foreign markets ...”

“Efficiency requires that the government make dairy farmers live with the economic consequences of their decision, whatever they may be.”

Now that NZDB’s time is up, is Global Dairy the best alternative? Another viable alternative was for one of the two large co-operatives to buy NZDB on removal of its statutory single desk status. The other co-operative would then have been left to make its own arrangements with respect to foreign marketing and sales. This could have meant developing its own marketing network, or contracting to an existing dairy products sales network (an option that the co-operatives had clearly already pursued through investment in foreign entities). This two dairy company model would have had the advantage of domestic competition in processing and enabled shareholders to benchmark management performance.

Like Global Dairy, a two company model would have mitigated the processing and allocation problem that existed between NZDB and the co-operatives. Mergers are potentially disruptive but Global Dairy seems preferable: Global Dairy merged three entities, whereas a two dairy company set-up would have created two entities from (at most) two mergers.

Among the co-operative dairy companies and NZDB is a nexus of informal arrangements that would be difficult to manage if one co-operative were to break away. First, the arrangements would have to be formalised in contract – in much the same way as trading government departments were converted to state owned enterprises – and then these contracts would have to be valued. Given the long history of informal arrangements both these steps would have entailed much conflict, and even litigation. To implement structural change simultaneously with de-regulation of the industry may have led to high adjustment costs.

Economies of scale might favour Global Dairy, although it is likely that these would lie in the area of marketing and distribution rather than processing per se. While there are some exhaustible economies in plant size, processing capital is a very small proportion of total

processing cost, which is dominated by the cost of the raw milk.

Both the alternatives retain the co-operative structure that many would argue is less efficient than the corporate form of business organisation, where shares are traded, however open entry and exit does create the incentives for a co-operative to approximate the efficient level of output. Retention of New Zealand supplier-only control under both alternatives creates issues over capital structure, such as the cost of raising capital and the limitations on potential foreign ownership and joint venture arrangements, and these issues will inevitably arise with significant successful integration into foreign dairy markets.

The political economy of the dairy industry is a major factor in its evolution and its current options. The centralisation of the industry’s processing activities and the importance of dairy in the rural regions have facilitated a strong political voice for the industry. This has resulted in heavy industry-specific regulation. Such are the interlocking co-operative and regulatory relationships that it is not possible to eliminate the statutory single desk without major legislative and organisational change. Further, without the support of suppliers any organisational/regulatory change will be very difficult and disruptive. Milk suppliers had the opportunity to accept or reject the Global Dairy proposal. Their vote to create Global Dairy is a way forward to a modern dairy industry. However the result is their responsibility. Efficiency requires that the government make dairy farmers live with the economic consequences of their decision, whatever they may be.