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The Effectiveness of DIRA in Fostering Competition and Economic Efficiency in New Zealand Dairy Markets

Robert D. Willig

Meg Guerin-Calvert

Andres V. Lerner

Compass Lexecon

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I. Introduction and Executive Summary

A. Introduction

We have been asked to conduct an economic evaluation of whether the Dairy Industry Restructuring Act (DIRA) of 2001 has been successful in providing for competition and economic efficiency in New Zealand dairy markets.¹ In this report, we address a number of questions related to this topic, including:

1. Does Fonterra have appropriate incentives to set a farm gate milk price that is consistent with competitive markets?
2. Does Fonterra's methodology for setting the farm gate milk price yield a milk price that is consistent with competition?
3. Is the framework for setting the price of the raw milk supplied by Fonterra to rival independent processors under DIRA consistent with economic efficiency?
4. Is the empirical evidence consistent with DIRA achieving its intended goal of promoting competition in the dairy processing market?
5. What does the economic evidence show with regard to competitive constraints posed by independent processors via entry, capacity expansion, and their ability to compete for raw milk supply from farmers?
6. Are increases in domestic dairy prices in recent years the result of Fonterra's methodology for setting the farm gate milk price?

Our analysis and conclusions are preliminary, and are based on the information we have received to date and our current understanding of the facts, regulation, and competitive dynamics. In addition, there are several issues that we do not address in detail in this draft report, including (1) a detailed analysis of broader issues of competition in downstream domestic dairy markets; (2) the specific details and implementation of Fonterra's Milk Price Model; (3) the Trading Amongst Farmers ("TAF") program, and its implications for efficiency and competition in the dairy processing market; and (4) the competitive implications (if any) of eliminating all or part of the DIRA regulations.

¹ We would like to thank Jonathan Bowater, Emmett Dacey, and Janin Wimer for providing excellent research assistance.

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B. Executive summary

We provide an economic evaluation of whether the Dairy Industry Restructuring Act (DIRA) of 2001 has been effective in ensuring competitive and economically efficient dairy markets in New Zealand. A primary goal of DIRA is to foster a competitive environment in which Fonterra faces effective competitive constraints both in the purchase of raw milk from dairy farmers and in markets for dairy outputs.

Concerns regarding the efficacy of DIRA in achieving its goals have been reflected in a recent submission by the New Zealand Ministry of Agriculture and Forestry (“MAF”). The submission articulated concerns by competitors that Fonterra has set the price it pays farmers for raw milk (the “farm gate milk price”) at a level that is inconsistent with competition and economic efficiency in dairy markets. The theory underlying these concerns (to the extent that it can be ascertained from the material provided) is that Fonterra, as the dominant buyer of raw milk and the dominant dairy processor, may have inhibited competition from rival processors by setting the farm gate milk price higher than the competitive level, thereby raising the costs of these rival processors.

The views summarized in the MAF submission seem to suggest a theory that Fonterra’s cooperative structure, in contrast to an investor-owned business, diminishes the constraints on Fonterra’s incentives and ability to set a farm gate milk price higher than the competitive level. The theory seems to be that because the cost to Fonterra of increasing the farm gate milk price is largely offset by a decrease in dividends paid to the same farmers, Fonterra effectively faces a lower cost of raising rivals’ costs than would an investor-owned business. We find such a theory is misguided for a number of reasons.

- The total payout that farmers receive from Fonterra, which consists of the farm gate milk price and dividend payment, compensates farmers for the raw milk they supply and the capital investments that are required to become a member of the cooperative. For a given initial capital investment required to supply Fonterra, farmers should be indifferent regarding the split of the total payment between the farm gate milk price and the dividend. To the extent that an increase in the farm gate milk price is offset by a decrease in dividends, a higher milk price would not make it more difficult for rival independent processors to compete against Fonterra for raw milk supply for a given share price. In theory, farmers will choose a processor on the basis of the total payout and the initial capital investments required to join the cooperative. This conclusion holds whether the rival processor is also a cooperative or investor owned.
- Because Fonterra’s share price currently is set on the basis of discounted future dividends, setting a farm gate milk price above competitive levels would cause an artificially *low* Fonterra share price. In turn, this would impose a cost on current Fonterra owners because the low share price would not be sufficient to cover the capital expenditures necessary to process the milk of new farmers and to make

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other necessary investments, such as the development of new products and marketing of Fonterra brands. This would result in *short-term* losses for Fonterra and its current owners.

- Any potential *long-term* benefits to Fonterra from a strategy of overpricing raw milk are limited by the fact that the vast majority of Fonterra's output is exported, and Fonterra has no ability to influence global dairy prices. Under these conditions, there is limited ability to recoup in higher output prices any short-term losses arising from overbidding for raw milk.

Competitive constraints on the farm gate milk price also limit Fonterra's ability to raise the regulated price at which Fonterra supplies raw milk to rival processors (the "DIRA milk price"). As articulated by MAF, competitors seem to assert that because this regulated price is set on the basis of the farm gate milk price determined by Fonterra, Fonterra has the ability to inflate the regulated DIRA milk price. However, the DIRA milk constitutes a very small share of the raw milk purchases of major independent processors. Thus, raising the DIRA milk price is unlikely to have any effect on the likelihood of driving independent processors out of business by raising their input costs. The DIRA milk supplied to rival processors is an even smaller share of Fonterra's total milk purchases. Thus, setting a farm gate milk price above the competitive level for purposes of raising the DIRA milk price provides very limited strategic benefit to Fonterra, while imposing the short-term costs described above.

To assess more fully the competitiveness of milk pricing under DIRA, we provide an economic framework for evaluating the farm gate milk price that would arise in competitive dairy markets, a fundamental goal of DIRA, and then compare that competitive equilibrium with Fonterra's methodology and principles for determining the farm gate milk price (the "Milk Price Model"). This framework reveals that in competitive markets, the price of raw milk from farmers would be driven up by competition between dairy processors up to the point where processors selling commodity milk products in the global market would be earning a normal rate of return on investment. The fact that this farm gate milk price will reflect all economic rents from selling New Zealand dairy commodity products in a global market does not mean that it is a monopoly price for raw milk. Rather, it is a competitive equilibrium and the economic rents would be reflected in a higher price of land that is suitable for dairy farming.

We assess whether the economic principles on which Fonterra's Milk Price Model is based replicate the farm gate milk price that would arise in a competitive market, and set out the following characteristics that suggests that they do. At a general level, starting with the global market prices that are part of the competitive equilibrium, the Milk Price Model takes the revenues that a notional processor could make from selling commodity dairy products (*e.g.*,

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various milk powders) in the global market and subtracts operating costs (including interest and depreciation) and a normal rate of return on investments.²

Competitors have expressed some concern about two assumptions of the model: (1) the assumption of a “notional” competitor operating “efficient” plants and (2) the assumption that this “notional” competitor sells a particular bundle of commodity dairy products in global markets.³ These assumptions, at least at a conceptual level, are consistent with the competitive equilibrium described above. One would expect capacity expansions to occur (as they have in the recent years) through the addition of cost efficient plants that are used to produce commodity products for sale in the global market. It is this marginal production that, in equilibrium, determines the competitive farm gate milk price.

In addition to competing for raw milk supply from farmers, independent processors also obtain raw milk from Fonterra. DIRA requires Fonterra to make available to rival processors up to 50 million liters of raw milk per year at a regulated price (and Goodman Fielder 250 million liters per year). We analyze whether this regulated price is consistent with economic efficiency. The economically efficient price that a vertically integrated owner of an essential input charges rival providers of a complementary product is informed by application of the Efficient Component Pricing Rule (ECPR). ECPR requires that a rival producer of a complementary component can successfully supply it in the market if (and only if) the producer is as efficient as the vertically integrated incumbent in the production of the complementary component. The ECPR price can be calculated as the price of the final product (global prices for commodity dairy products) minus the relevant costs of providing the complementary component (dairy processing). In principle, Fonterra’s Milk Price Model methodology is consistent with the ECPR framework.

Moreover, certain supply requirements under DIRA provide benefits to rival processors that obtain DIRA milk from Fonterra, such as the ability to “square curve” and greater flexibility to alter raw milk purchases, which leads effectively to an under-pricing of DIRA milk compared to the price of raw milk obtained directly from farmers. Raw milk procured from farmers is delivered with the usual seasonal variation and subject to “take or pay” contractual commitments. We observe that large processors [] of DIRA milk provided by the regulations, likely because of these benefits which effectively provide a lower “quality-adjusted” price.

The empirical evidence on the dairy processing market and across the dairy supply chain (including upstream dairy farming, downstream domestic dairy markets, and dairy exports) is consistent with DIRA achieving its intended goal of promoting competition and economic

² While we have not to date conducted a detailed assessment of the Milk Price Model, we understand that Fonterra has attempted to model costs, capacity, and related factors by reference to the actual operating parameters of certain plants.

³ We have not at this point provided a comprehensive assessment of the specifics of the notional competitor in the Milk Price Model.

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efficiency. In the processing market, considerable entry and expansion has occurred, both by large processors that export most of their product and small processors that serve specialty domestic markets. In fact, capacity expansion by large independent processors has accelerated in recent years. Independent processors have been able to compete for raw milk directly from farmers, both by enticing farmers to switch from Fonterra and by attracting new dairy farmers. Although the DIRA milk supply from Fonterra may have been important initially by lowering the cost of entry for rival processors, it appears that it currently accounts for only a small share of the total milk supply of the large independent processors. This suggests that competing processors have been able to attract substantial independent sources of supply to support their considerable growth of exports at prevailing farm gate and contractual prices.

Competition in the dairy processing market, however, is not the only, or even primary economic objective of the DIRA. From an economic perspective, the key competitive question is whether DIRA has provided for competitive downstream retail markets and upstream raw milk supply markets. This can occur even if there has not been significant actual switching to, or expansion by rival processors. The analyses conducted and reported herein suggest that many factors, including DIRA, have led to competitive markets. An important element has been the global market for commodity dairy products. The global market has largely provided the margins and demand that have supported substantial expansion in New Zealand of Fonterra and its rival processors. It has also served to competitively constrain the prices that Fonterra can charge for its dairy products and, as a result, its incentive to artificially increase the milk price that it pays farmers.

A recent criticism of the current regulatory structure and of Fonterra's Milk Price Model focuses specifically on recent increases in domestic dairy prices. This criticism seems to be that because the farm gate milk price is set by Fonterra on the basis of global prices for commodity dairy products, and the farm gate price is a key driver of domestic dairy prices, the Milk Price Model "ties" domestic dairy prices to global prices. It is true that increases in domestic dairy prices have been influenced by rising global prices. However, this link between global and domestic dairy prices is not an artificial, anticompetitive, or an economically inefficient consequence of Fonterra's Milk Price Model. Rather, it is a normal and economically efficient part of the globalization of New Zealand's dairy industry, and the incentive of firms to allocate supplies to the highest returning use—namely, that a processor will sell in the domestic market only if it can obtain a return equivalent to the return it can obtain in the export market. Increases in global dairy prices also raise the competitive farm gate milk price because New Zealand processors will seek higher potential returns in the global market by competing to increase their procurement of raw milk from farmers, which drives up the farm gate milk price. These economic forces would be expected even in fully competitive markets.

Lastly, our overview analysis shows that domestic prices have increased by less than global prices. This is consistent with increased competition in domestic wholesaling and retailing, as well as the growth of private label brands.

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II. Economic Objectives of the Dairy Industry Restructuring Act (DIRA)

A. Competitive concerns addressed by DIRA

Fonterra was created by the merger of the New Zealand Dairy Board, New Zealand Dairy Group, and Kiwi Co-operative Dairies in October 2001 to promote and grow New Zealand's dairy exports. Fonterra is structured as a cooperative with dairy farmer suppliers generally holding ownership shares in proportion to the amount of milk they supply. The Dairy Industry Restructuring Act (DIRA) of 2001 authorized the formation of Fonterra and at the same time created a set of controls designed to mitigate the ability of Fonterra, as the dominant milk purchaser and processor in New Zealand, to exercise market power in domestic dairy markets.

The main competitive concerns with the creation of Fonterra were (1) that as the dominant buyer of raw milk from dairy farmers it would have the potential to exercise *monopsony* power, and (2) as both the dominant buyer and processor of raw milk it would have the incentive and ability to block entry and expansion by rival dairy processors, which could have adverse competitive consequences for the supply of dairy products to the domestic market.⁴ DIRA and the associated Raw Milk Regulations were designed to address these competitive concerns at several points in the dairy supply chain—the farm gate market, the dairy processing market, domestic markets for dairy products (*e.g.*, pasteurized milk, cream, cheese, yoghurts, and domestic dairy products), and dairy export markets.

B. Principal components of DIRA

The central provisions of DIRA are aimed at the promotion of competitive constraints on Fonterra, especially as might be evidenced by actual competition between Fonterra and independent processors. In particular, DIRA provisions seek to address competitive concerns by preventing Fonterra from restricting rival processors' access to raw milk.⁵ There are two main pieces of regulation under DIRA that were intended to achieve this: (1) provisions that facilitate switching between Fonterra and rival processors, and (2) the requirement that rival processors must be able to obtain raw milk from Fonterra where this is necessary for them to compete in dairy markets.⁶

⁴ At the time of its creation, Fonterra collected about 96 percent of raw milk in New Zealand.

⁵ In addition, DIRA required Fonterra to dispose of shares in New Zealand Dairy Foods Limited (NZDF). It is now owned by Goodman Fielder and supplies a variety of dairy products domestically to wholesale and retail outlets. DIRA also deregulated the export controls on dairy products by allowing milk processors to manage their own exporting activity rather than the New Zealand Dairy Board having an export monopoly.

⁶ See DIRA Section 71(a).

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1. Provisions that facilitate switching between Fonterra and rival processors

DIRA imposes requirements to enable and facilitate farmer switching between Fonterra and independent milk processors. These are intended to afford independent processors the ability to compete with Fonterra for raw milk supply from dairy farmers in the farm gate market. They also ensure that Fonterra cannot generally lock-in suppliers through the use of long-term exclusive contracts. The requirements include conditions to ensure that farmers can enter and exit Fonterra, and “non-exclusivity” provisions.

Exit requirement: The exit requirements mandate that if a farmer no longer wants to supply milk to Fonterra, Fonterra must buy back the farmer’s Fonterra shares at a fair price. In particular, farmers must receive the same share price as shareholders entering Fonterra at the same time. Farmers must receive payment from Fonterra within 30 working days of the end of the season in which they give notice. Farmers wishing to cease supplying Fonterra also have the right to purchase the milk vat on their farm from Fonterra at its fair market value.

Entry requirement: The entry requirement mandates that if a farmer wants to invest in and supply milk to Fonterra, Fonterra has to sell the farmer Fonterra shares and allow the farmer to supply his milk, provided that the farmer meets the minimum production requirement and that the transportation cost to collect the raw milk is no higher than the highest cost incurred by Fonterra to transport an existing shareholder’s milk to the same factory in the same season. The only exception is if Fonterra reaches its processing capacity limit. If Fonterra deems in its “reasonable opinion” that it does not have the capacity to process the increased milk production, it will issue a capacity constraint notice; otherwise, it must accept any farmer that wishes to join Fonterra.⁷

Non-exclusivity requirement: Farmers who supply (and own shares in) Fonterra are also permitted at any time during the season to supply up to 20 percent of their weekly milk supply to a rival processor.⁸

Long-term contract restrictions: DIRA also requires that within a 160 kilometer range, 33 percent of raw milk supplied by farmers must be available to be supplied either to an independent processor or collected under contracts with Fonterra that cease to be binding at the end of each season. This requirement ensures that independent processors have the ability to compete for a significant amount of raw milk supply at any point in time.

In sum, these requirements are designed to ensure the prospect of competition between processors—more specifically, to ensure that independent processors can obtain raw milk supply

⁷ The DIRA regulations permit Fonterra to refuse farmer applications to supply milk for at most one season in a given geographical area, and provided such notice is given by the first day of the application period, which runs from December 15 to February 28 prior to the season beginning the following June 1. (DIRA Sections 86-87.)

⁸ The farmer must allocate the supply to the independent processor in a separate vat from that of Fonterra.

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directly from farmers, and that Fonterra does not generally lock-up farmers into exclusive long-term contracts.

2. Raw Milk Regulation

The second key piece of DIRA is the Raw Milk Regulation, which makes available to rival processors a certain amount of raw milk from Fonterra at a regulated price. Specifically, under the regulation, processors have the right to 50 million liters per year (and Goodman Fielder 250 million liters), up to an overall cap of 600 million liters per year. If the collective demand is likely to exceed the cap, milk supply to each processor is scaled back in proportion to the amount each takes. Beginning with the 2010/11 season, the regulated milk price for independent processors purchasing DIRA milk from Fonterra is set at Fonterra's farm gate milk price plus 10 cents per kgMS.⁹ This 10 cent "seasonal margin" was implemented with the intention of reflecting the costs incurred by Fonterra of providing independent processors a "square curved" milk supply that doesn't follow the seasonal production curve. Independent processors also pay Fonterra a transportation charge for the cost of delivering fresh milk to their facilities.

III. The Farm Gate Milk Price

The Farm Gate Milk Price has become a focal point for the assessment of the efficacy of DIRA, competitive constraints on Fonterra, and the competitiveness of New Zealand dairy markets. There are two separate but related concerns about whether Fonterra sets a price for raw milk at competitive or economically efficient levels under the DIRA regulations. The first concern is the level of the farm gate milk price that Fonterra pays its farmers, which is not regulated by DIRA. The second concern is the price at which Fonterra supplies rival processors under the DIRA regulations (*i.e.*, the DIRA milk price). These concerns are related because the DIRA milk supplied to independent processors is regulated at a price based on the farm gate price determined by Fonterra. Both prices affect the ability of independent processors to obtain raw milk at a price that allows them to compete profitably with Fonterra. However, the economic framework to assess whether the farm gate price and the DIRA milk price have been set by Fonterra at levels consistent with competition and economic efficiency are somewhat distinct. We address concerns regarding the farm gate milk price that Fonterra pays its farmers in this Section, and address the price of DIRA milk to independent processors in Section III.

⁹ This DIRA regulated price does not include additional charges for "winter milk" supplied in June and July.

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A. Fonterra's incentives to set a competitive farm gate milk price

There have been two principal (and, in fact, somewhat opposite) claims regarding Fonterra's incentives to set a farm gate milk price that deviates from the "competitive" level.¹⁰

- First, Fonterra, as the dominant purchaser of raw milk in New Zealand, would be able to exercise *monopsony* power by restricting purchases and *lowering* raw milk prices to farmers.
- Second, Fonterra could *raise* the farm gate price to farmers in order to raise the cost to independent processors of acquiring raw milk.

These issues have been discussed in several economic reports, as well as submissions from the New Zealand Commerce Commission ("Commerce Commission") and MAF. There are some issues in those discussion papers that merit clarification and we do so in the discussion below.

1. Fonterra's incentive to set a farm gate milk price that is "too low"

As noted above, one concern regarding the creation of Fonterra was the ability of Fonterra to exercise monopsony power over farmers who would have limited or no effective alternative choice of dairy processor. Monopsony refers to a market in which there is a single buyer (as opposed to monopoly, in which there is a single seller). A firm with monopsony power can affect the price that it pays for products—the firm can decrease the price it pays by restricting the amount that it purchases.¹¹ Thus the concern was that Fonterra, as the dominant buyer of raw milk from farmers (and the only buyer in some local areas), would exercise monopsony power by restricting its purchases of raw milk and as a result reducing the price that it pays for raw milk.¹²

We examined the factors that could limit the incentive to exercise monopsony power or otherwise constrain Fonterra. Fonterra's cooperative structure diminishes incentives to exploit

¹⁰ We describe a competitive farm gate milk price in Section B.

¹¹ See, e.g., Pindyck, Robert S., and Daniel L. Rubinfeld, *Microeconomics*, 5th ed. (Upper Saddle River: Prentice Hall, 2001), pp. 352-355.

¹² There has been some confusion over the meaning of "monopsony" power in prior economic reports and policy papers. For instance, the Commerce Commission interprets monopsony power as the ability to control farmers and thereby foreclose independent processors from the raw milk supply. In response to the argument that monopsony power is attenuated by Fonterra's cooperative structure, the Commerce Commission states that "if Fonterra has market power in the acquisition of milk it can presumably outbid its rivals. In such instances, suppliers would rationally favour Fonterra over its rivals." (Commerce Commission, Response to NERA's Critique of the Commerce Commission's Submission on the Raw Milk Review, 21 August 2008, par. 6.) However, this issue is distinct from monopsony power which, as we describe above, is the ability to lower the farm gate milk price by restricting purchases of raw milk from farmers. Rather, the issue as identified by the Commission pertains to the control over an essential input and the ability to create and exercise market power in the dairy processing market. We address this issue in the following section.

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monopsony power in the purchase of milk from farmers—*i.e.*, to depress raw milk prices by restricting Fonterra purchases of raw milk. In particular, Fonterra is owned by the same dairy farmers that supply its raw milk, and thus has limited (if any) incentives to depress raw milk prices. Lowering the farm gate milk price below the competitive level would be contrary to the interests of Fonterra’s owners.

In principle, any increased profits earned by depressing the milk price paid to farmers would be returned to the farmers through a higher dividend payment. Dividend payments are based on revenues less payments to farmers for raw milk and operating costs (including interest expenses and depreciation). If Fonterra lowers the farm gate milk price to farmers (and does not change operating expenses or retained earnings), total dividend payments to farmers would increase by the same amount as the total decrease in total expenditures on raw milk.

In fact, farmers currently must generally buy shares in Fonterra in proportion to the amount of raw milk they supply—*i.e.*, one share gives a farmer the right to supply milk equivalent to one kilogram of milk solids.¹³ This general proportionality between ownership and supply implies that the dividend to each farmer would increase by the same amount as the total price decrease to that farmer. Thus, the total amount each farmer receives (which is referred to as the total payout) would be unchanged by a decrease in the farm gate milk price.¹⁴

Despite this equivalence between a low milk price/high dividend and a high milk price/low dividend, a decrease in the farm gate milk price would have an economic effect because of the way Fonterra’s share price is currently determined. Fonterra’s share price is the amount a farmer must pay to have the right to supply raw milk to Fonterra (or receive upon exit). It is set every six months by an independent appraiser based on the discounted value of Fonterra’s expected future cash flows.¹⁵ A decrease in the farm gate milk price and commensurate increase in dividends would not affect the total payout received by farmers, but it would have the effect of increasing Fonterra’s share price.

This would decrease participation in Fonterra by raising the “entry” price relative to the total payout that farmers can expect to receive from participation. DIRA’s “entry and exit”

¹³ From midseason 2009/10 shareholders were given more flexibility in the number of co-operative shares they can own. Shareholders can now hold anywhere between 1.0 and 1.2 shares for each kilogram of milk solids produced, rather than the previous limit of 1.0 share for each kilogram of milk solids produced. The shares in excess of production are known as “dry” shares. Fonterra’s profit is distributed as a dividend based on all shares held, including any “dry” shares.

¹⁴ We do not address in this memorandum how this might change after the implementation of the Trading Amongst Farmers (“TAF”) program. In theory, the aspects of regulation and competition that have lead to competitively functioning markets at present should still apply under TAF.

¹⁵ An independent appraiser is required to provide Fonterra’s Board with a range of fair share value, after considering business factors such as projected earnings and cash flow. Fonterra’s Board sets the share price after considering the independent appraiser’s findings. The most recent valuation used discounted cash flow analysis, which estimates the present value of a company’s long-run cash flow, and multiple analysis, which benchmarks the company being valued company against comparable firms.

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requirement and competition from independent processors means that dairy farmers can choose a processor based both on the payout offered (which includes the farm gate milk price and dividends, in the case of a cooperative) and on the share price. Purchasing shares in Fonterra (and other cooperatives) is a significant capital investment for dairy farmers—we understand that the average Fonterra farmer has about NZD \$0.5 million invested in Fonterra. The ownership of Fonterra shares therefore entails a significant opportunity cost in terms of alternative investments for such capital. If the share price that farmers must pay to supply their raw milk to Fonterra is too high relative to the payout that they can expect to receive from Fonterra, they will choose rival cooperatives which offer a similar payout with a lower share price, or decide to supply their milk to an investor-owned processor and invest their capital elsewhere.

It could be argued that such an increase in the entry price is analogous to an exercise of monopsony power vis-à-vis farmers. However, in light of competition for farmers by independent processors, which we discuss below, such a concern seems unwarranted. An increase in share price for a given total payout (or, similarly, a decrease in total payout for a given share price) would drive farmers to rival processors. Moreover, raising the share price would raise entry costs only for farmers that are not at the time part of Fonterra, who by definition bear no switching costs of contracting with a rival processor. This makes the competitive constraint that other processors impose on Fonterra's ability to arbitrarily raise the share price even more significant.

In theory, Fonterra could increase operating expenses or retain more earnings (and become inefficient), but this also would be adverse to the interests of the owners of Fonterra.¹⁶ It would risk losing dairy farmers and their milk supply to rival processors, which would impose a cost on the remaining farmers because it would leave Fonterra with underutilized processing capacity. Moreover, Fonterra would have to buy back shares, causing a hit to its balance sheet. This presents a significant competitive constraint on Fonterra's ability and incentive to exercise monopsony power.

2. Fonterra's incentives to foreclose rival processors by setting a farm gate milk price that is "too high"

The second concern regarding Fonterra's setting of the farm gate milk price is that Fonterra can inhibit competition from rival processors by setting a farm gate milk price above the competitive level.¹⁷ In particular, it has been argued that Fonterra can foreclose rivals by setting a farm gate milk price that does not allow rival independent processors to compete

¹⁶ The fact that Fonterra's cooperative structure mitigates incentives to exercise monopsony power vis-à-vis dairy farmers was recognized by MAF: "Fonterra's cooperative form (with a focus on maximizing returns to supplier-shareholders) mitigates to some degree against the likelihood of inefficiently low farm gate milk prices being set." (MAF Memorandum from Iain Cossar, Fonterra's Farm Gate Milk Price, 15 June 2011, p. 4.)

¹⁷ See, e.g., MAF Memorandum from Iain Cossar, Fonterra's Farm Gate Milk Price, 15 June 2011, p. 5: "the concern is that the cooperative may be paying too much to its supplying farmers and understating its costs/profits."

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profitably. In theory, a higher farm gate milk price paid by Fonterra means that rival processors must themselves compete by paying higher farm gate prices, or offer service or other benefits to offset the higher farm gate milk price by Fonterra. The claim is that such an increase in the cost of a crucial input can reduce the profit margins of independent processors to the point where they can no longer stay in business, or decide not to enter at all.

This concern is analogous to theories of predatory overbidding.¹⁸ Predatory overbidding is similar to predatory pricing, where a firm sells at prices below cost in the short term in order to drive rivals out of the market, but on the buying side. The theory of predatory overbidding entails a dominant firm driving rivals out of the market by overbidding, or overpaying, for an essential input in order to raise their costs. Because such overbidding is, by definition, unprofitable in the short term, for predatory bidding to be a profitable strategy the firm must be able to decrease the input price and/or increase output prices after it drives rivals out of the market by raising their costs, and convinces potential entrants not to enter (this is referred to as “recoupment” of the investments in overbidding).

In this context, the theory put forth by Fonterra’s competitors seems to be that Fonterra overbids for raw milk from farmers, relative to a “competitive” farm gate milk price. Paying higher than competitive prices for raw milk would be unprofitable for Fonterra in the short term, but it would be strategically profitable in the long term to the extent that it could drive rival dairy processors out of business and convince potential processor entrants not to enter.

However, there is an important distinction between the purchase of an input by a vertically unintegrated firm and the farm gate milk price paid by Fonterra. As we discuss above, because the farmers who supply the essential input are the owners of Fonterra, an increase in the farm gate milk price paid to farmers proportionally decreases the dividend that each farmer receives.¹⁹ Based on this fact, the articulation of concerns set out in the MAF submission seems to suggest that for cooperatives such as Fonterra, competitive constraints on setting a farm gate milk price that is higher than a competitive or economically efficient level are more limited than for investor-owned businesses. The MAF submission states that “[a]s a cooperative, Fonterra’s incentives to set an efficient farm gate price may be less strong than for an investor owned processor.”²⁰ The theory seems to be that because Fonterra can increase the farm gate milk price and largely or completely offset the increased cost by a decrease in dividends paid to the same

¹⁸ See, e.g., Roger D. Blair and John E. Lopatka, “Predatory Buying and the Antitrust Laws,” 2008 Utah L. Rev. 415.

¹⁹ This distinction has been pointed out by the Commerce Commission, which explained that “Fonterra’s payouts are fully fungible between the dividends paid to shareholders and the price of milk. This means that Fonterra’s shareholders would be indifferent if it lowered dividend payouts and commensurately increased the farm gate price of milk.” (Commerce Commission, Review of the Raw Milk Regulations: Views from the Commerce Commission, 4 June 2008, par. 36.)

²⁰ MAF Memorandum from Iain Cossar, Fonterra’s Farm Gate Milk Price, 15 June 2011, p. 2.

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farmers, there is little or no cost to Fonterra of raising the milk price in order to raise the costs of rival processors.

The fact that Fonterra is a cooperative does change the cost of setting a farm gate milk price that is above competitive levels because an increase in the farm gate milk price decreases the dividend paid to the same farmers. However, by the same token, a higher farm gate milk price would not make it more difficult for independent processors to compete against Fonterra for raw milk supply. To the extent that an increase in the farm gate milk price is offset by a decrease in dividends, dairy farmers do not receive a higher total payout. Thus, putting aside effects on Fonterra's share price (which we discuss below), a higher milk price that is offset by a lower dividend does not make it more difficult for independent processors to compete against Fonterra. For a given total payout and share price, the ability of independent processors to compete with Fonterra for raw milk supply should be unaffected by the division of the total payout between Fonterra's milk price and the dividend paid. Farmers would decide whether to switch to a rival processor based on Fonterra's total payout to farmers, which is independent of the split between the milk price and the dividend, and the amount of capital they have to invest.²¹

This conclusion holds whether the rival processor is also a cooperative or an investor-owned business. Assume, for example, that Fonterra offered a competitive farm gate milk price of NZD \$4 and a dividend of \$1, for a total payout of \$5 per kg/MS. Would a rival cooperative or investor-owned processor be forced to offer a higher payout to dairy farmers if Fonterra instead paid a farm gate milk price of \$4.99 and a dividend of \$0.01?

- In the case of a cooperative, the rival would be able to compete against Fonterra by offering a total payout of at least NZD \$5 (assuming for now, that the share price to “enter” into that cooperative is similar to Fonterra's share price). The rival could offer a lower milk price and higher dividend, or vice-versa, as long as the total payout equaled at least \$5 per kgMS. If Fonterra offered a milk price of \$4.99 and a dividend of \$0.01, the rival cooperative would still need to offer a total payout of \$5.
- An investor-owned processor would need to offer a farm gate milk price of at least \$4 per kgMS, and would not offer a dividend to its raw milk suppliers. The investor-owned processor would be able to compete for dairy farmers despite offering a lower total payout (\$4 versus Fonterra's \$5 payout) because its dairy farmers would not need to make a capital investment in order to supply the processor. While some dairy farmers would prefer to invest in Fonterra and receive dividends, others would choose to invest their capital elsewhere, or would not have the capital necessary to invest in a dairy cooperative. As with the rival

²¹ The total payout to farmers is driven by Fonterra's total profitability. If Fonterra increases its profit per KgMS, this would increase the total payout to farmers and make it more difficult for rivals to compete. But this is a normal part of the competitive process between dairy processors.

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dairy cooperative, the ability of the investor-owned business to compete with Fonterra would be independent of whether Fonterra offered a high milk price and low dividend or vice-versa. If Fonterra offered a milk price of \$4.99 and a dividend of \$0.01, the investor-owned rival would still be able to compete by offering a milk price of \$4.

Of course, this is only part of the story because the division of the total payout into a milk price and dividend affects the share price of Fonterra. Fonterra's share price is set on the basis of the expected dividends and, thus, an increase in the farm gate milk price and commensurate decrease in dividends lowers Fonterra's share price. A farm gate price that is higher than some "competitive" level implies an artificially low share price (or cost of "entry") relative to the effective dividend paid (which equals the dividend paid plus the extent to which the farm gate milk price is higher than the competitive level). For instance, if Fonterra set a farm gate milk price of \$4.99 and dividend of \$0.01, its share price would be close to zero. New dairy farmers supplying Fonterra would be able to join the cooperative with almost no capital investment, and receive a total payout of \$5. This artificially low share price would (1) encourage entry by new farmers, (2) encourage farmers to switch to Fonterra from other processors, and (3) discourage Fonterra farmers from switching to other processors.

In essence, competitors' theory regarding a strategy of setting a high milk price and artificially low dividend can be articulated as a strategy of *under-pricing* the share price, or cost of "entry" into Fonterra. As in the standard economic theory of predation, such a strategy of under-pricing entry into Fonterra would entail a short-term cost on Fonterra and its owners. In particular, the price of entry would be *lower* than the costs of serving new entrants in terms of the capital investment needed to build the capacity necessary to process their raw milk, to develop new products, and market Fonterra brands. Those new entrants would impose a higher cost on Fonterra and its owners than the benefits that they provide, at least in the short term. Current owners of Fonterra therefore would subsidize new entrants. Competitors' claims that Fonterra and its owners do not bear a cost of raising the farm gate milk price do not account for these economic effects that arise because of its effect on the share price.²²

²² It has been argued that farmers are less sensitive to the share price than they are to the total payout. Thus, according to the argument, Fonterra can increase the milk price and impose a cost on rival processors without bearing the costs of an artificially low share price—*i.e.*, attracting inefficient entry into Fonterra by farmers that, due to a low share price, do not fund the capital costs needed to build the capacity necessary to process their raw milk, to develop new products, and market Fonterra brands. However, if farmers were not sensitive to the share price, then raising the farm gate milk price would have little effect on independent processors' ability to compete. An artificially low share price would have a real economic effect on rival processors' ability to compete against Fonterra. If farmers (either existing farmers that are part of Fonterra, farmers that supply to other processors, or new entrants) are not sensitive to the share price, then a strategy by Fonterra of raising the farm gate milk price in order to lower dividends and the share price would be futile. As we discuss above, the division of the total payout between the milk price and the dividend is fungible if one put aside its effect on the share price. Simply put, any theory that Fonterra can avoid the inefficient entry of dairy farmers into the cooperative also implies that Fonterra does not take many potential farmers away from rivals.

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These short-term costs of setting an artificially low share price would be particularly significant in light of the growing supply of raw milk in the South Island, and Fonterra's continuing investments in plant capacity to secure this supply. We understand that Fonterra spends about NZD \$[] million per year in building plant capacity to process growth milk, with most such new capacity in the South Island. (Fonterra's investments in expanding capacity are addressed in more detail in Section IV.A.1 below.) If new dairy farmers entering into the Fonterra cooperative (or new members expanding supply) did not contribute enough capital to fund the investments necessary to meet such growth, these investments would destroy value in Fonterra, and existing owners of Fonterra would be the ones to bear such a loss in value.²³

Of course, because Fonterra (and its current owners) would bear a short-term cost from a strategy involving a high milk price, a low dividend, and an artificially low share price does not mean that such a predatory or overbidding strategy would not be profitable in the long-term. The theory put forth by Fonterra's competitors is that Fonterra's strategy would ultimately be profitable if, in the long term, it can exclude rival processors and inhibit the entry of new rivals.

However, the long-term benefits to Fonterra of such a strategy would be very limited at best. The long-term profitability of such a strategy depends on whether Fonterra would be able to increase the output prices and margins of dairy products once it drives rival processors out of the market (which eventually would be reflected in a higher payout to farmers). However, Fonterra's ability to raise output prices through raising the farm gate price is constrained by the fact that the vast majority of its products are sold in a global market for dairy products—in particular, over 95 percent of Fonterra's products are exported.

It is highly unlikely that Fonterra can affect global dairy prices. Although New Zealand accounts for 34 percent of global dairy export volume, which is not insignificant, it accounts for only about 3 percent of global milk production. The fact that other countries produce large amounts of dairy products that are consumed domestically is relevant because it may indicate that other countries could increase their export volumes in response to increases in global dairy prices (in economic terms, that there is supply elasticity between domestic production and global exports). (We provide further discussion and empirical analysis of this issue in Section IV.C below.) Because over 95 percent of its products are sold abroad, and Fonterra cannot influence the global price of dairy products, there is little prospect of a long-term economic gain to Fonterra (and its owner-farmers) from a strategy to foreclose rival processors by setting the farm gate milk price too high. Fonterra would have to bear a short-term cost on all its raw milk purchases in order to raise the price on 5 percent of its output.

²³ These short-term losses would be greater the more that Fonterra overbids for the milk price (and thereby underprices its share price). However, this does not mean that a strategy of overpricing milk at the farm gate by a small amount is more likely to be profitable for Fonterra because such a strategy also would be much less likely to impact rivals' profitability. Given that major processing rivals have made significant sunk investments in building plant capacity in recent years, overpaying for raw milk at the farm gate by a small amount is unlikely to have any impact on rivals' ability to remain in business.

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In sum, a strategy of overbidding for raw milk from dairy farmers and under-pricing entry (*i.e.*, its share price) does not appear to be a profitable long-term strategy for Fonterra in light of the industry structure. Such a strategy would entail significant short-term costs and limited, if any, long-term benefits. Moreover, such a predatory strategy is inconsistent with the empirical evidence. As we discuss in Section IV.A, considerable entry and expansion by independent processors has occurred, both by large processors that export most of their product and small processors that serve specialty domestic markets. In fact, this capacity expansion by large independent processors has accelerated in recent years. Major processors have been able to attract substantial volumes of milk from dairy farmers, and compete profitably for at least some period of time, suggesting that the farm gate milk price has not been set at predatory level. In light of this entry and expansion (and lack of exit by rivals), it is highly unlikely that Fonterra would be able to recoup any short-term losses from the alleged overpricing of raw milk.

B. The farm gate milk price that would arise in a competitive market

An assessment of whether Fonterra's farm gate milk price is at a competitive level must consider what farm gate milk price would arise in fully competitive dairy markets. This is a key question because such a competitive outcome is what the DIRA regulations were intended to achieve. We now turn to this question, and discuss how the principles on which Fonterra bases its determination of the milk price compares to this competitive farm gate milk price.²⁴

1. Economic framework for assessing the farm gate milk price that would arise in a competitive market

To explore the economic forces that would lead to a competitive farm gate milk price, we assume fully competitive dairy markets at all stages in the supply chain, including processing, dairy farming, and dairy output markets. In this situation, processors would compete, as they do now, for raw milk at the farm gate and sell most as milk powder in a global market at a price that they cannot influence. (*See* discussion below.)

As a starting point, we assume that the farm gate milk price is very low (relative to dairy output prices and processing and selling costs). Thus, in the short term, dairy processors would make profits that exceed a normal rate of return because of the farm gate milk price relative to global dairy prices and processing costs. Attracted by the excess rate of return, dairy processors would try to expand existing plants or build new ones, and new dairy processors would enter. This would lead to increased demand for raw milk, which would in turn result in an increase in the farm gate milk price. Of course, the increase in the milk price would lead to an increase in the supply of raw milk from farmers as farmland is converted from other uses to dairy farming.

²⁴ We do not address details regarding the actual implementation of Fonterra's Milk Price Model in this memorandum. Rather, we address whether the conceptual framework of the Milk Price Model is consistent with the farm gate milk price that would arise in competitive markets.

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But as long as the supply of raw milk is not large enough to affect the global milk powder price, the price of raw milk will continue to increase, even as the supply of raw milk from farmers increases.

This process would continue until dairy processors are making a normal rate of return on their investments. In theory, the equilibrium farm gate milk price that would arise in competitive markets would equal the price that would yield a normal rate of return for dairy processors that purchase raw milk from farmers to produce milk powder and sell milk powder in global markets at the market-determined global price. This price equals the global powder price minus cost of processing and selling costs (including depreciation and interest expenses) minus a normal rate of return on investments.

Thus, in fully competitive dairy markets, the raw milk price at the farm gate will reflect all economic rents from selling New Zealand milk in a global market. Processors would cover their costs and earn a normal rate of return on their investments. Importantly, the fact that the farm gate milk price would allow dairy farmers to capture all economic rents in the supply chain does not mean that such a price reflects a monopoly price—rather this is a competitive equilibrium, and those economic rents would be reflected in a higher competitive price of land that is suitable for dairy farming. Consistent with these competitive dynamics, both the price of dairy land and the amount of land used for dairy have increased as a result of increased globalization of New Zealand’s dairy industry. (We discuss this evidence in Section IV.D below.)

2. In principle, the Milk Price Model methodology replicates the farm gate milk price that would arise in a competitive market

The above competitive equilibrium for the farm gate milk price is consistent, at least conceptually, with the Milk Price Model implemented by Fonterra. At a general level, the Milk Price Model takes the revenues that a notional processor could make from selling commodity dairy products (including WMP, SMP, BMP, AMF, and butter) in the global market, and subtracts operating costs (including interest expenses and depreciation) and a normal rate of return on capital.²⁵

Two key assumptions of the Milk Price Model are: (1) the use of a “notional” competitor utilizing efficient plants and (2) the assumption that the “notional” competitor produces

²⁵ This framework for determining the farm gate milk price is described by MAF: “In essence the farm gate milk price is calculated by taking Fonterra’s total revenues and netting off operating costs (including tax and interest), depreciation, and a return on capital to derive a residual cashflow that is available to pay for the milk Fonterra purchases from its farmers. The farm gate milk price is then calculated by dividing that residual cashflow by the total amount of milksolids Fonterra processes. (MAF Memorandum from Iain Cossar, Fonterra’s Farm Gate Milk Price, 15 June 2011, p. 4.)

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commodity milk powders for sale in the global market.²⁶ As reflected in a recent submission by MAF, competitors have raised some concern regarding these characteristics of the Milk Price Model.²⁷

Regarding the first issue, MAF states that “the costs Fonterra uses in its calculations are ‘notional’, based on a Hypothetical Efficient Competitor (HEC) in New Zealand dairy markets, *i.e.*, they are based on a theoretical set of efficiently designed and operated processing facilities, rather than the actual processing costs Fonterra faces.”²⁸ MAF explains the concern that “[a]t a basic, theoretical level, if Fonterra is less efficient than the HEC this use of notional figures leads to an overstatement of revenues, and understatement of costs, and therefore the overstatement of the residual cashflow that Fonterra has available to pay its supplying farmers for raw milk.”²⁹ In other words, competitors seem to claim that if Fonterra is less efficient than the notional efficient competitor, the farm gate price derived from the Milk Price Model will be higher than the milk price that Fonterra could profitably pay.

The use of a notional “efficient” plant is consistent with the competitive equilibrium described above. One would expect that entry into dairy processing would occur (as it has in recent years), and that entrants would build efficient plants with the most cost effective technology. In other words, Fonterra’s *average* processing costs would not be the driver of the competitive farm gate milk price. What matters from an economic perspective is the efficiency of *marginal* plant capacity. Even if Fonterra (and other processors) have higher average variable costs of processing, the farm gate milk price will be bid up by competitors utilizing efficient plants.

There has been significant entry, capacity expansion, and plant replacements in recent years. We understand that much of this entry and expansion, both by Fonterra and by independent processors, has consisted of plants that are more cost effective than plants built several years ago. For instance, in the last few years Fonterra has built new efficient plants or refurbished existing ones to make them more cost efficient. In the South Island, Fonterra constructed a new cost-efficient dryer at its Edendale plant that came on line at the start of the 2009/10 season, increasing the facility’s output capacity by about 40 percent. In the North Island, capacity expansion is more limited, and we understand that most of Fonterra’s investments have consisted of replacing older less-efficient dryers and plants. In 2006, Fonterra replaced two dryers at its Te Awamutu site with units that were considerably more energy efficient than the existing ones, which enabled Fonterra to realize significant savings in

²⁶ Fonterra’s 2010 Annual Report provided the following breakdown of products that comprised the Milk Price “basket” that season: Whole milk powder (58%), Skim milk powder (28%), Butter (10%), AMF (6%), and BMP (2%).

²⁷ MAF Memorandum from Iain Cossar, Fonterra’s Farm Gate Milk Price, 15 June 2011.

²⁸ *Id.* at p. 4.

²⁹ *Id.*

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operational costs.³⁰ Similarly, Fonterra refurbished two WMP dryers at its Maungaturoto site, which reduced energy consumption by 10 percent through the investment in new energy-saving equipment.³¹

MAF also raises the concern that “[t]he revenue is based on a ‘representative basket’ of the commodity dairy products, rather than Fonterra’s actual product mix.”³² However, the use of a notional competitor that manufactures commodity dairy products for sale in the global market also is consistent with the competitive equilibrium described above.

In recent years, the vast majority of capacity expansion has been for the production of commodity products that are sold abroad. We understand that most of Fonterra’s investments in new plant capacity since DIRA was enacted have been for milk powder production. For example, the additional milk powder produced by Fonterra’s recent Edendale expansion went to the export market.³³ Thus, commodity milk powder products for sale abroad have been the marginal product in recent years.

One concern that seems to be suggested by MAF’s submission is that basing the Milk Price Model on revenues from the export of commodity dairy products ties domestic dairy prices to global prices, which have increased in recent years. Increases in global dairy prices have led to increases in the farm gate milk prices (paid by both Fonterra and independent processors), which, because it is paid by processors supplying domestic and export markets, has translated into increases in domestic dairy prices. The farm gate price affects domestic dairy prices because it is the price that processors, including those that serve the domestic markets, pay for raw milk. This trend in domestic dairy prices has led to criticisms of Fonterra’s methodology for setting the farm gate milk price³⁴

However, the increase in domestic dairy prices in the last few years is not an artificial consequence of Fonterra’s Milk Price Model. Rather, it is a consequence of globalizing the New Zealand dairy industry. Domestic dairy prices would be linked to global dairy prices even if all markets across the dairy supply chain were fully competitive given the actual structure of processing and demand. This is particularly so because the overall size of the domestic processing industry is substantially larger than would be necessitated by local demand. The export market influences the opportunity cost of selling milk product domestically because raw milk can be processed into commodity products and sold abroad rather than sold domestically. In fact, all the major independent processors (except for Goodman Fielder) have chosen to export

³⁰ Fonterra Press Release, “New Dryers to Boost Savings for Fonterra,” 3 April 2006, available at <http://www.fonterra.com/wps/wcm/connect/fonterra.com/fonterra.com/our+business/news/media+release+archive/new+dryers+to+boost+savings+for+fonterra>.

³¹ “\$15 Million Upgrade for Fonterra Maungaturoto,” Fonterra Press Release, 18 November 2005.

³² MAF Memorandum from Iain Cossar, Fonterra’s Farm Gate Milk Price, 15 June 2011, p. 4.

³³ <http://www.foodprocessing-technology.com/projects/fonterraneupoweredm/>.

³⁴ See, e.g., Andrea Fox, The Press, “Fonterra probe may spur new regulations,” 23 June 2011.

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the vast majority of their products rather than sell dairy products domestically. Because global dairy prices affect the opportunity cost of selling dairy products domestically, the global commodity milk price drives the domestic price. Again, this is a normal and efficient part of the competitive process. (*See* discussion in Section IV.B below.)

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IV. The Price of DIRA Milk to Independent Processors

A. Fonterra's incentives and ability to raise the DIRA milk price

The other source of raw milk to independent processors is from Fonterra under the DIRA regulations (the Raw Milk Regulation). DIRA makes available to rival processors 50 million liters of raw milk per year from Fonterra at a regulated price (and Goodman Fielder 250 million liters). The price of the DIRA milk is regulated on the basis of the farm gate price set by Fonterra. (*See* discussion above in Section II.B.2.)

This regulatory structure raises two potential concerns regarding the DIRA milk price. The first concern is that tying the regulated DIRA milk price to the farm gate price, which is determined by Fonterra (*i.e.*, is unregulated), gives Fonterra control over the price it charges rivals for raw milk. We discuss this issue in Section III.A.1. The second concern is that the DIRA milk price is too high relative to the farm gate price, so that it makes DIRA milk uneconomical for rival processors compared to contracting directly with farmers. We discuss whether the empirical evidence supports this concern in Section III.A.2 below. More generally, the key economic question is whether the price of DIRA milk approximates an economically efficient level. We address this issue in Section III.B in the context of the Efficient Component Pricing Rule (ECPR) rule.

1. Constraints on Fonterra's incentive to increase the farm gate milk price in order to increase the price of DIRA milk to independent processors

DIRA regulates the price of DIRA milk that Fonterra sells to independent processors by basing the price on the farm gate price that Fonterra pays its farmers. Thus, one concern is that Fonterra's control over the farm gate milk price allows it to control the price of DIRA milk to rival processors. MAF described this concern in its 15 June 2011 memorandum: “[t]he key concern raised by stakeholders again was the [DIRA Raw Milk] price. The farm gate milk price makes up the vast majority of the regulated milk price, therefore any concerns with the farm gate milk price flow on to the regulated milk price.”³⁵

As we discuss above, Fonterra's incentives to set a farm gate milk price that is either higher or lower than the competitive level are limited by several characteristics of the dairy markets in which it operates, including that most of its products are sold in a global market where Fonterra is most likely a price taker, and the cooperative structure of Fonterra itself coupled with the entry and exit provisions of DIRA.

³⁵ MAF Memorandum from Iain Cossar, Fonterra's Farm Gate Milk Price, 15 June 2011, p. 3. MAF also states that “the regulated milk price (for independent processors taking milk from Fonterra under the Raw Milk regulations) is set at ‘Fonterra's farm gate milk price plus \$0.10 per kilogram of milk solids’. This means that Fonterra's farm gate milk price is the key driver not only of the price all processors pay to farmers at the farm gate, but also the price paid by independent processors to Fonterra for raw milk under the DIRA at the factory gate...” (*Id.*)

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The fact that the farm gate milk price also determines the price of DIRA milk sold to independent processors does not necessarily create incentives for Fonterra to increase the farm gate milk price. The DIRA milk supply constitutes a very small share of Fonterra's total milk collections. In particular, DIRA milk supply constitutes only [] percent of Fonterra's total supply of raw milk.³⁶ Thus, setting a farm gate milk price above competitive levels for purposes of inflating the price of DIRA milk supplied to competitors would be unprofitable and inefficient for Fonterra.

Moreover, the DIRA milk constitutes a very small share of the raw milk supply of major independent processors. As we describe below, in the 2009/10 season, only about 10 percent of the raw milk processed by independent processors was supplied to them by Fonterra under DIRA. The other 90 percent of their raw milk supply was obtained directly from dairy farmers. Thus, raising the DIRA milk price is unlikely to have any material effect on the likelihood of driving independent processors out of business by raising their input costs. Setting a farm gate milk price above the competitive level for purposes of raising the DIRA milk price provides very limited strategic benefit to Fonterra, while imposing the economic inefficiencies described above.

2. The empirical evidence indicates that the price of DIRA milk to independent processors is low relative to the farm gate milk price

Another key issue is whether the regulated differential between the DIRA milk price and the farm gate milk price paid by Fonterra makes the DIRA milk uneconomical for independent processors. The empirical evidence indicates that this is not the case. Almost all large independent processors generally []. For example, in the 2009/10 season, Tatua, Open Country Dairy, New Zealand Dairies, and Synlait all took DIRA milk [].³⁷ And, despite the increase in the DIRA regulated milk price for the most recent season (2010/11), Tatua, Open Country Dairy, and Synlait are all forecast to take []. Furthermore, Westland cooperative (which hasn't taken DIRA milk in previous seasons) [].³⁸ This indicates that the price of the raw milk supplied by Fonterra to independent processors is not too high relative to the price at which independent processors contract directly with farmers.

The fact that all large independent processors [] reflects the significant benefits that are provided by certain DIRA supply requirements. One substantial benefit, which represents a cost-saving for purchasers or a lower effective price, is the ability to "square curve" to a greater extent

³⁶ Estimate includes the 250 million liters supplied to Goodman Fielder. We understand from Fonterra that Synlait will [] in the 2010/11 season, and Westland []. Smaller processors do not [], presumably because they do not require large volumes of milk. For example, [] purchased approximately 22 million liters, and [] and [] approximately 5 million liters. Based on 2009/10 season. (Source: Fonterra estimates.)

³⁷ Based on 2009/10 season. (Source: Fonterra estimates.)

³⁸ 2010/11 season forecast as of May 2011. []

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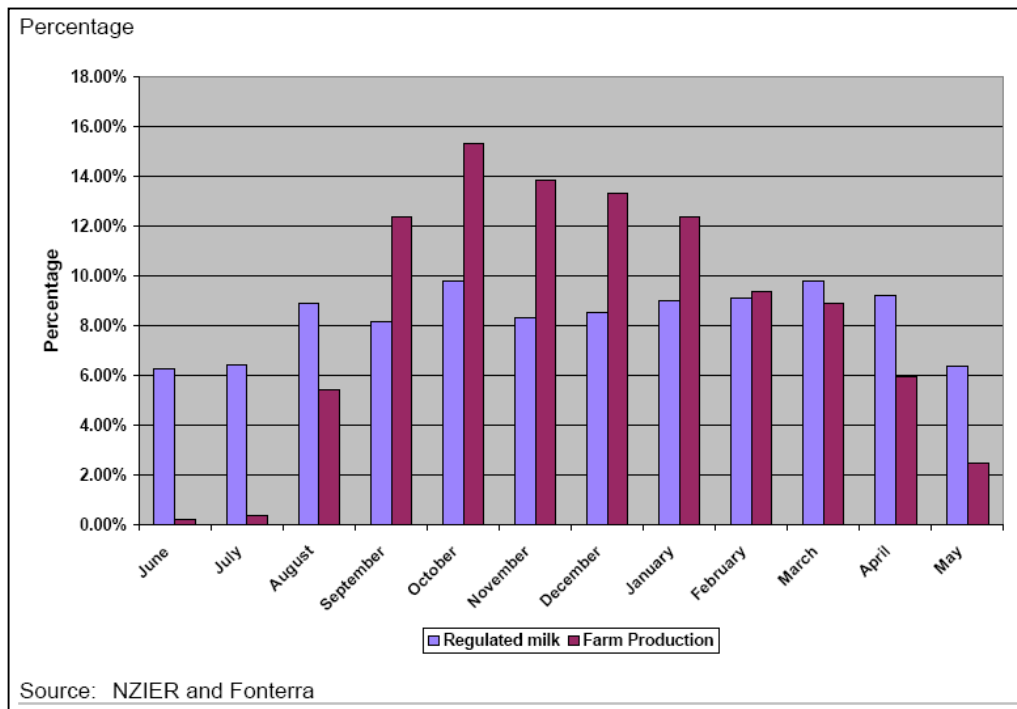
than is feasible when processors contract directly with farmers. Because dairy cows in New Zealand are grass fed, the volume of milk produced throughout a season varies depending on the amount of grass available for feed. The pattern of seasonal milk production is shown in the chart below. This production seasonality means that Fonterra’s milk processing capacity has to be sufficient to process the maximum volume of milk produced in the peak of the season (*i.e.*, the volume of milk produced in the peak October/November months). Because of this cost of additional capacity that is required to process milk during peak months, milk is more costly to process and less valuable during these peak months.

[]

While processors purchasing from farmers would face this raw milk supply seasonality, under the Raw Milk Regulation of the DIRA, independent processors can vary the amount they take throughout the season.³⁹ In particular, they can purchase milk from Fonterra when their supply from farmers is low (the off-peak months) to smooth out the volume of milk they process and maintain a high plant utilization rate throughout the season. This is known as “square curving”. The chart below, which shows the monthly distribution of total raw milk production in New Zealand and of the DIRA milk supply, depicts independent processors taking advantage of the ability to “square curve.”

³⁹ DIRA stipulates that during the months of August, September and November through to April the quantity of DIRA milk taken from Fonterra by an independent processor cannot exceed by more than 10 percent the amount of milk taken by that independent processor from Fonterra in October in that season. This so-called “October 110% rule” caps the amount of milk an independent processor is able to take from Fonterra in “shoulder months” when supply is more limited, with the intent of reducing the ability of independent processors to use Fonterra-supplied DIRA milk to achieve a more stable flow of milk supply in their own facilities across the season.

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This DIRA requirement provides a benefit to independent processors—in effect, it lowers the price of milk supplied by Fonterra to independent processors under the DIRA regulations. Such a benefit must be taken account in an economic analysis of the DIRA milk price.

Another important benefit provided by the DIRA supply requirements is the flexibility given to independent processors to alter their raw milk purchases, including increasing or ceasing supply, on short notice. We understand that competitive contracts with farmers usually take the form of “take-or-pay” contracts, and thus processors contracting directly with farmers, including Fonterra, typically do not have such flexibility.

For instance, independent processors can cease buying DIRA milk when market prices drop. The DIRA regulated milk price is set via a forecast at the beginning of each season. The forecast is revised quarterly to reflect changes in global dairy export commodity prices.⁴⁰ This gives independent processors an opportunity to reevaluate the cost of DIRA milk compared to their supply from farmers and their expected revenues, and to change their consumption accordingly, throughout a given quarter. Thus, independent processors have the option to take raw milk from Fonterra when it is valuable and leave it when it is not.

The chart below shows an example of this “option value” to [] during the 2008/09 season, when it cancelled orders of DIRA milk twice, once when [], and again when the WMP

⁴⁰ Independent processors pay for DIRA milk each quarter based on the forecast prices, and then have a reconciliation process at the end of each season (called a “wash-up”) based on the final DIRA milk price for the season and the amounts purchased at forecast prices.

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price dropped.⁴¹ In this latter event, the global WMP price dropped about 50 percent over the course of the season, leading [] to cancel their orders in January, February and March 2009.

[]

The fact that large independent processors generally [] indicates that the entitlement to a square supply curve and additional rights associated with DIRA milk are significant, and effectively render the DIRA milk price economically low relative to the price at which independent processors obtain raw milk from farmers.

B. The efficient component pricing rule (ECPR)

1. The ECPR framework

A key issue regarding the supply of DIRA milk is the economically efficient price at which Fonterra should be required to supply raw milk to rival processors under the DIRA regulations. We assume for purposes of this discussion that Fonterra is a bottleneck provider of an essential input into dairy processing—the supply of raw milk. As we discuss below, the facts that large independent processors have been able to compete successfully for the supply of raw milk from farmers and that the DIRA milk supply from Fonterra makes up a small share of their total raw milk purchases, indicate that Fonterra is not a bottleneck provider of an essential input. Regardless, in this section, we evaluate the attributes of an economically efficient price of DIRA milk if Fonterra were assumed to be a bottleneck provider of raw milk.

The economically efficient price that a vertically integrated owner of an essential input charges rival providers of a complementary product (*e.g.*, an upstream product) is informed by application of the efficient component pricing rule (ECPR).⁴² ECPR yields a price which ensures that a rival producer of a complementary component can successfully supply it in the market if (and only if) the producer is as efficient as the vertically integrated incumbent in the production of the complementary component. ECPR therefore provides for efficiency in the supply of the complementary product (dairy processing).⁴³

ECPR proposes that the economically efficient price charged for an essential input by a vertically integrated firm be equal to the firm's opportunity cost of providing the input, comprised of the production cost of the input plus the opportunity cost of selling the input to a

⁴¹ Source: Fonterra DIRA Milk Supply Graphs.

⁴² See, *e.g.*, Robert D. Willig, "The Theory of Network Access Pricing," in H.M. Trebbing (ed.), Issues in Public Utility Regulation, Michigan: Michigan State University Public Utility Papers, 1979; William J. Baumol, Janusz A. Ordover, and Robert D. Willig, "Parity Pricing and its Critics: A Necessary Condition for Efficiency in Provision of Bottleneck Services to Competitors," Yale Journal on Regulation, Vol. 14, Winter 1997, pp. 145-164.

⁴³ *Id.*

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rival rather than using the input internally to manufacture the final product (dairy products sold domestically or exported).⁴⁴ This opportunity cost is the foregone revenues to the vertically integrated firm from the lost sale of the final product. The ECPR price can be calculated as the price of the final product minus the relevant costs of providing the complementary component (dairy processing).⁴⁵ In the case of the DIRA milk supply, the economically efficient price of raw milk given by ECPR would be the price of the final product (*e.g.*, the global price of commodity milk products) minus the costs of processing the raw milk and selling the final dairy products.

Importantly, because ECPR is generally applied to the supplier of a bottleneck input, the ECPR price reflects the monopoly profits that the bottleneck provider can earn on the sale of the final product (these monopoly profits are reflected in the opportunity cost of the foregone revenues from lost sales of this final product). This has been the primary source of criticism regarding ECPR.⁴⁶ In the case of the raw milk price, however, the ECPR price does not reflect monopoly profits in the sale of raw milk. As we discuss in Section II.B above in the context of the farm gate milk price, this price for raw milk is the price that would arise in competitive markets for dairy farming and dairy processing. This is because Fonterra's output prices are constrained by global dairy markets, even if we were to assume that Fonterra is a bottleneck supplier of raw milk in New Zealand. For this reason, in theory, the competitive farm gate price in New Zealand is fully reflective of the competitive conditions of the applicable global dairy markets.

2. The principles on which the Milk Price Model is based are consistent with ECPR

In principle, Fonterra's Milk Price Model methodology is broadly consistent with the ECPR framework. As we describe above, the ECPR price can be derived as the price of the final product (*e.g.*, the global price of commodity milk products) minus the costs of processing the raw milk and selling the final dairy products. Similarly, the Milk Price Model takes the revenues that a notional processor could make from selling commodity dairy products in the global market and subtracts operating costs (including interest and depreciation) and a normal rate of return on investments. We do not address in this draft report many details regarding the implementation of the Milk Price Model. Instead, we consider the two concerns raised by competitors regarding the Milk Price Model that we discuss above in the context of the farm gate milk price: (1) the use of

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *See, e.g.*, William Baumol, Janusz Ordover, and Robert Willig, "Parity Pricing and its Critics: Necessary Condition for Efficiency in the Provision of Bottleneck Services to Competitors," C.V. Starr Center for Applied Economics, New York University, September 1996, pp. 12-13.

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a “notional” competitor utilizing efficient plants and (2) the assumption that the “notional” competitor produces commodity dairy products for sale in the global market.⁴⁷

Regarding the first issue, the concern is that an independent processor that is more efficient than Fonterra on average—*i.e.*, that has lower average processing costs—but not as efficient as the notional competitor used in the Milk Price Model, may not be able to compete and earn an adequate rate of return on its investments.⁴⁸ This concern is that, in this sense, the application of the Milk Price Model based on the notional competitor does not create a “level playing field” for Fonterra and independent processors.

However, the appropriate implementation of ECPR in this context is based on the operating costs of the marginal Fonterra plant, not Fonterra’s average operating costs across its entire operations. In determining the relevant cost for implementing ECPR in this context, the question is not what costs would be avoided by Fonterra if it sold all of its raw milk to rival processors rather than using it internally for its own production. Rather, the relevant measure is the costs that Fonterra would avoid if some smaller share of its raw milk supply was sold to rivals. Specifically, DIRA requires that Fonterra supply 50 million liters a year to each independent processor. The total amount of DIRA milk supplied by Fonterra is approximately 500 million liters in 2010/11, including the provision of 250 million liters to Goodman Fielder.⁴⁹ By comparison, Fonterra’s total raw milk supply is approximately 14 billion liters, and its average plant processes about 300 million liters per year. Thus, the total raw milk supplied to independent processors other than Goodman Fielder under DIRA is roughly the same as the production capacity of a typical Fonterra plant.

These are the relevant volumes pursuant to assessing the costs that Fonterra would avoid by selling raw milk to rivals under DIRA rather than processing the raw milk and selling dairy products itself. The relevant question for purposes of applying ECPR to the DIRA milk supply is the cost efficiency of a marginal plant rather than of Fonterra as a whole. In this sense, ECPR creates a “level playing field” for the volumes of output that Fonterra is required to supply to rival processors. In particular, ECPR yields a price which ensures that a rival processor can profitably compete if (and only if) it is as efficient as Fonterra in processing these volumes of raw milk, and selling dairy products based on these volumes.

Moreover, if one determines an ECPR price based on the processing costs of Fonterra’s overall production of dairy products, rather than the volumes of raw milk required by DIRA, it would be appropriate to also base the ECPR calculation on Fonterra’s entire product mix.

⁴⁷ See, e.g., MAF Memorandum from Iain Cossar, Fonterra’s Farm Gate Milk Price, 15 June 2011.

⁴⁸ MAF Memorandum from Iain Cossar, Fonterra’s Farm Gate Milk Price, 15 June 2011, p. 4.

⁴⁹ The five large independent processors (Tatua, Open Country Dairy, NZ Dairies, Synlait, and Westland) are forecast to take [] million liters in the 2010/11 season (based on May 2011 estimates from Fonterra), and small independent processors will take about [] million. Assumes Goodman Fielder takes 250 million liters. (Source: Fonterra estimates.)

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Because Fonterra manufactures value-added products and commodity products that yield higher returns than the commodity dairy products used in the Milk Price Model, the DIRA milk price based on Fonterra as a whole may be higher, not lower. It would be inconsistent and incorrect to calculate an ECPR price based on Fonterra's operating costs averaged across their entire operation, but not on all the products supplied by Fonterra.

As we discuss above, in the last few years Fonterra has built new cost-efficient plants or refurbished existing ones to make them more cost efficient. In the South Island, where there has been significant expansion both by Fonterra and rival processors, Fonterra constructed a new cost-efficient dryer at its Edendale plant that came on line at the start of the 2009/10 season. If Fonterra sold a certain amount of raw milk to a rival processor in the South Island rather than using it internally, the likely outcome would be that Fonterra would expand less rapidly. In this sense, the "marginal" plant in the South Island is likely to be a cost-efficient plant such as Edendale.

In the North Island, capacity expansion is more limited and we understand that most of Fonterra's investments have consisted of replacing older less efficient dryers and plants. For instance, in 2006, Fonterra installed two new dryers in its Te Awamutu site which were considerably more energy efficient than the existing ones.⁵⁰ The question for understanding the relevant capacity in evaluating efficiency is whether Fonterra would shut down additional less efficient plants or dryers in the North Island if more of Fonterra's raw milk supply was sold to rival processors instead of processed by Fonterra itself in the North Island. However, the fact that some of the less efficient plants and dryers remain in operation, despite having higher operating costs, must mean that there is some efficiency in utilizing those plants versus replacing them with energy efficient ones. In particular, building or expanding energy efficient plants entails significant capital costs (which affects profitability due to the cost capital and depreciation), compared to utilizing legacy plants that have been built years ago. Thus, legacy plants that are less energy efficient may, when all economic costs are taken into account, be as cost-effective (which is why such plants remain in operation). Thus, it is reasonable to assume that the relevant capacity and costs to consider in applying an ECPR test are those of the more efficient facilities. This is consistent with the Milk Price Model's use of a notional efficient plant.

The second concern raised by competitors is the use in the Milk Price Model of a "notional" competitor that produces commodity products for sale in the global market rather than Fonterra's actual product mix. Again, the key question pursuant to the application of ECPR is not Fonterra's overall product mix, but rather the marginal product manufactured. In particular, if Fonterra sold more raw milk to rivals under DIRA, production of which dairy product(s)

⁵⁰ Fonterra Press Release, "New Dryers to Boost Savings for Fonterra," 3 April 2006, available at <http://www.fonterra.com/wps/wcm/connect/fonterra.com/fonterra.com/our+business/news/media+release+archive/new+dryers+to+boost+savings+for+fonterra>.

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would be reduced? We understand that most recent expansion by Fonterra (and other processors) has been for the production of milk powders for sale in the global market. Moreover, Fonterra must continue to produce certain value added products pursuant to long term contracts. It is likely that if Fonterra sold more raw milk to rival processors rather than processing it internally, most or all of this decrease would come from milk powders sold abroad. Thus, the use of milk powders sold in global markets as the marginal product seems appropriate.

As we mention above, even if Fonterra's actual product mix were used, it is not clear that it would yield a lower DIRA milk price. In fact, it likely would yield a higher DIRA milk price because, although non-commodity products have higher production costs, they also generate greater revenue. Because these non-commodity or value added products often have higher profit margins than the commodity bulk products that are the basis of the Milk Price Model, inclusion of such products would lead to a DIRA milk price that is higher than the current farm gate milk price that is derived from the model. Similarly, a product mix comprised of a broader range of commodity products (including, for example, cheese, casein, and milk protein concentrate) also would yield a higher DIRA milk price to the extent that they have higher returns than on the commodity products that form the basis of the Milk Price Model.⁵¹

One can assess the milk price that would be derived by using all of Fonterra's actual plants and products by analyzing Fonterra's profitability. A key question in implementing an ECPR analysis is whether the vertically integrated firm could be profitable if it paid the same price for the essential input (raw milk) that it charges its rivals. But, in this case Fonterra does pay the same price for raw milk that it charges its rivals under DIRA (putting aside the \$0.10 "seasonal premium" that we discuss below). Thus, if Fonterra is actually profitable as a whole given the price that it pays for raw milk from farmers, it means that an ECPR analysis based on Fonterra as a whole would yield a farm gate milk price that is at least as high as the milk price set by Fonterra. We understand that Fonterra has been profitable during the relevant period.

Lastly, in some ways, Fonterra's Milk Price Model may yield a DIRA milk price that is lower than the appropriate measure of the ECPR price. First, as we discuss above, certain supply requirements under DIRA provide benefits to processors and lower the implicit DIRA milk price. These benefits include (1) the ability to "square curve" to a greater extent than is feasible when processors contract directly with farmers and (2) greater flexibility given to independent processors to alter their raw milk purchases.⁵² When Fonterra sells raw milk to independent

⁵¹ Additionally, to the extent that Fonterra produces other commodity dairy products (or value added products) due to long-term contracts, or because it has made sunk investments in assets to manufacture such products, those products would not be marginal products in the sense that Fonterra would not reduce the manufacture of such products if it sold more raw milk to rival processors under DIRA.

⁵² Under DIRA, independent processors pay a 10 cent "seasonal premium" per kilogram of milksolids (except during the months of June and July), which is intended to capture the cost to Fonterra of "square curving" by independent processors. However, it does not seem that the 10 cent premium covers the costs to Fonterra. For instance, according to the Explanatory Note to the 2010 Bill to amend DIRA, which provided for the 10 cent

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processors as required by DIRA, it does not avoid the increased processing capacity costs resulting from seasonal production or of rigid take-or-pay contracts with farmers. In essence, these are costs that Fonterra continues to incur when it sells DIRA milk to rival processors. Therefore, the ECPR price, which is based on the processing costs that Fonterra could avoid if it sold raw milk to independent processors, would not reflect the benefits provided to independent processors under DIRA.

Fonterra's Milk Price Manual includes several firm-wide fixed costs in its calculation, which also have the effect of lowering the DIRA milk price. These fixed costs include administrative expenses, supply chain overhead costs, and fixed sales commissions. Because ECPR is based on costs that are avoidable to Fonterra, and because the volume of raw milk at issue is unlikely to be large enough to affect these costs (*i.e.*, the costs are fixed for volume changes of this magnitude), some of these costs would not be included in an ECPR calculation.⁵³

All in all, at least at a conceptual level, the Milk Price Model is consistent with the economically efficient price that is defined by ECPR, and may even yield a lower raw milk price than the ECPR price.

premium, if independent processors maximized their use of the "October 110% rule," Fonterra would incur an additional cost of \$0.155/kgMS over the farm gate milk price.

⁵³ This was recognized by the Commerce Commission, which explain that the "ECPR price is calculated by subtracting from the final output price the costs that Fonterra avoids. Given the small volume of milk that independent processors purchase, Fonterra would likely argue that it does not avoid significant costs. For this reason, an access price determined using the ECPR would likely be high (higher than regulated prices under the Regulations)..." (Commerce Commission, Review of the Raw Milk Regulations: Views from the Commerce Commission, 4 June 2008, p. 3.)

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V. DIRA Has Been Successful in Fostering Competition in New Zealand Dairy Markets

In this Section, we discuss whether the empirical evidence is consistent with the success of DIRA in promoting competition in New Zealand dairy markets. In Section V.A, we discuss competition between dairy processors. We consider the extent to which independent processors have been able to obtain raw milk directly from farmers, have entered and expanded processing capacity, have switched across processors, and have been able to compete profitably. However, competition in the dairy processing market is not the only or even the primary economic objective of the DIRA regulations. Also important is whether downstream domestic dairy markets and upstream raw milk supply markets have remained competitive. In Sections V.B to V.D, we discuss whether the empirical evidence is consistent with the competitive objectives of the DIRA regulations in (1) downstream domestic dairy markets, (2) exports of dairy products, and (3) the upstream raw milk supply market. We note that DIRA could promote competition and competitive conditions without substantial entry and expansion of rival processors, and observe that the entry and expansion that have occurred demonstrate that rivals are a potent alternative for farmers and in providing processing capacity.

A. Processing market

1. Dairy processing capacity

a) *Independent processors have entered and expanded processing capacity*

There has been considerable entry by independent processors in both the North and South Islands, so that there is now a greater number of major dairy processors than there were at the time Fonterra was formed. These processors include:

- Tatua is a cooperative that has been in existence for almost 100 years. It continues to develop its manufacturing capacity for specialized value-added products to facilitate growth over the next five years. Two capital projects were approved in 2010: (1) the expansion and development of its foods products processing plant, and (2) improvements to its specialized products dryer. Both projects are scheduled for completion in 2012.⁵⁴
- Westland is a cooperative based in the South Island. Westland plans to establish a new manufacturing plant at Rolleston by August 2011, and may also expand its Canterbury and Hokitika processing “significantly” over the next couple of years to compete with Fonterra. Westland’s plan is to source milk from farmers in Canterbury. To make that milk cheaper to transport to specific regions in New Zealand, it plans to place a reverse osmosis processing plant at the Rolleston site.

⁵⁴ www.tatua.com/home/Heritage, accessed 16 June 2011.

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Westland may consider building a value-added product factory in 2013 at the Rolleston site.⁵⁵

- Open County Dairies (OCD) is a corporation with operations in both the North (Waharoa and Imlay) and South (Awarua) Islands. OCD is currently the second largest milk processor in New Zealand and is the second largest producer of globally traded WMP in the world.⁵⁶ It has steadily expanded its dairy processing facilities. The first processing site in Waharoa started producing cheese in September 2004. Open Country further developed the Waharoa facility by adding a whey plant in 2006, an AMF plant in 2007 and a WMP plant in 2008. The second site was a WMP plant at Awarua Southland in 2008. The third site was a WMP plant at Wanganui (Imlay) which began producing in August 2009. Its current processing capacity is 68 million kgMS (34m kgMS at Waharoa, and 17m kgMS each at Imlay and Awarua).
- Synlait is a corporation with operations in the South Island. Synlait's first processing facility was commissioned in August 2008, and it has subsequently expanded its milk processing capabilities. In October 2008, Synlait added an extension to its existing plant to enable the firm to increase its processing capacity. In August 2009, Synlait Milk opened a small scale specialty milk products plant to serve as a product development facility and test specialized ingredients. Recently, Bright Dairy (China's largest supplier of specialized milk powder products to the Asian market) invested \$82 million in Synlait which has enabled the processor to build a second milk powder plant, almost doubling Synlait's processing capacity, to 46 million kgMS.⁵⁷

These large independent milk processors are predominately focused on supplying product for export rather than supplying domestic dairy markets. In fact, they sell almost all of their dairy products in the export market. Synlait's entire production volume is sold outside of New Zealand. We understand that Open Country Dairy sells at most 1 percent of its cheese domestically, and 100 percent of its powder in the export market. Westland sells between 90 and 95 percent of its dairy products in the export market, and only its cheese products are sold in New Zealand.

As the chart below indicates, independent processors have expanded processing capacity considerably during the relevant period. In fact, this expansion has accelerated in the past few years. In particular, including planned expansion for the coming season, three of the last four

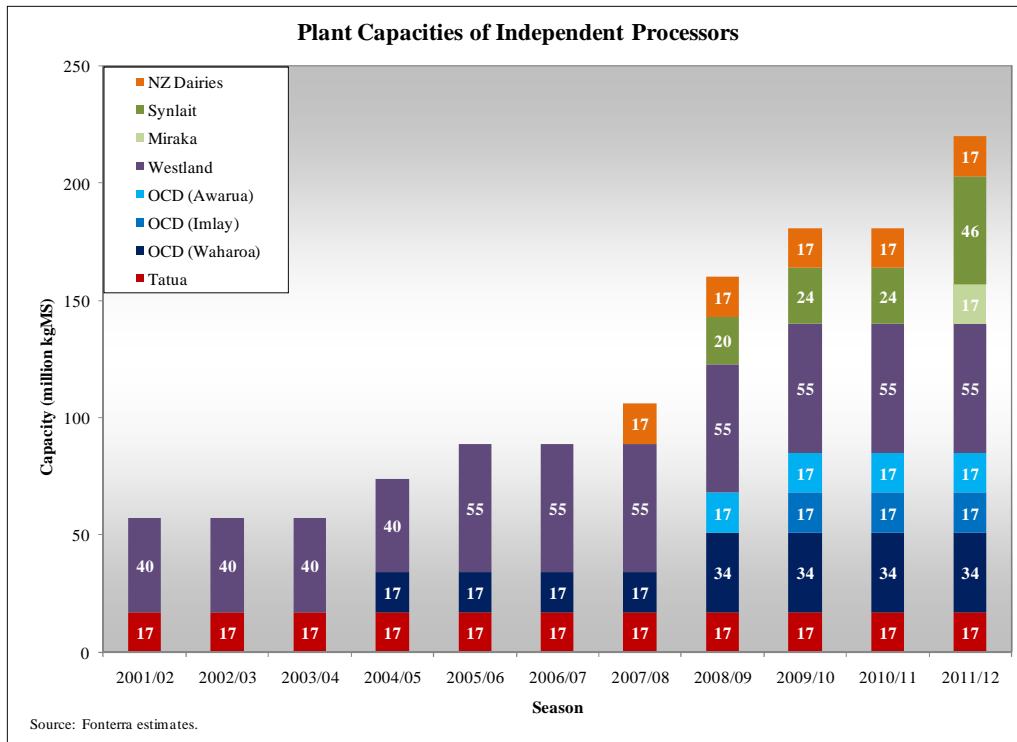
⁵⁵ Alan Wood, The Press, "Fonterra rival plans Rolleston plant; Westland Milk Products," 6 May 2011.

⁵⁶ Source: Fonterra.

⁵⁷ The New Zealand Herald, "Chinese to buy Synlait majority stake," 20 July 2010.

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seasons saw the biggest year-to-year changes in independent processor capacity since the DIRA was implemented.



Capacity expansion by independent processors continues following the change in the DIRA regulated milk price calculation, which took effect for the 2010/11 season. For example, Synlait’s second milk powder plant will almost double Synlait’s processing capacity, as mentioned above. Miraka is also planning to open its new processing plant in the coming season. (These capacity expansions for Synlait and Miraka are shown on the chart above for the 2011/12 season.) Tatua began building its new foods plant in 2010 and the project is scheduled for completion in 2012 and Westland’s new Rolleston plant is due for completion in August 2011.

The history of actual expansion by independent processors, and attendant investments in capacity, imply a strong belief by independent processors that they can secure a supply of raw milk at a price that allows them to operate profitably. The fact that independent processors continue to expand capacity (and in fact such expansion has accelerated), and have plans to continue investing in capacity, suggest that independent processors still believe that they can compete profitably. This empirical evidence is consistent with the conclusions outlined above—that DIRA has been effective in creating an environment that allows for competition and

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investments by rival processors, and that the farm gate milk price set by Fonterra has not hindered such competition.

b) *Fonterra also continues to expand processing capacity*

Fonterra also has continued to invest in expanding its milk processing capacity. For example, Fonterra's Edendale plant came on line at the start of the 2009/10 season.⁵⁸ The plant manufactures UHT and instant whole milk powders. Fonterra built its new manufacturing facility to respond to the strong milk growth in the South Island from farmers expanding production and new conversions of land to dairying. As the world's most efficient powder plant and housing the world's largest milk powder dryer, the facility has the capacity to process more than 15 million litres of milk per day, with its new Edendale 4 dryer capable of processing 3.8 million litres per day.⁵⁹

In April 2010, Fonterra announced plans for a new milk processing plant in Canterbury, which it expects to begin operating by September 2012. The investment will be among the largest investments in manufacturing in New Zealand in the last five years and will cater to milk growth in the area. Fonterra is considering placing high-efficiency milk powder plants at that location, similar to the dryer in Edendale in Southland.⁶⁰

During 2010, Fonterra opened new large scale cool stores in both the North and South Islands, including New Zealand's largest cool store in Hamilton, which opened in September 2010. This new cool store is a central point to store all Fonterra's butter and cheese made in the Waikato prior to exportation. A similar hub with dry and cool stores at Mosgiel, near Dunedin, opened in October 2010. Fonterra expects that developments such as these that increase its supply chain capacity will maximize efficiency through greater economies of scale.⁶¹

2. Independent processors have been able to compete for supply of raw milk directly from farmers

a) *The DIRA regulations have created contestability in raw milk purchases*

An important goal of the DIRA regulations is to create an environment where independent processors can compete for raw milk supply directly from farmers. Legislation to improve contestability of dairy farmers, such as the "entry and exit" and "non-exclusivity" requirements and restrictions on long-term contracts were intended to achieve such contestability.

⁵⁸ Fonterra Annual Report, 2008, p. 19.

⁵⁹ Fonterra Annual Report, 2009.

⁶⁰ Fonterra Press Release, "Fonterra Outlines Plans for New Milk Processing Plant in Canterbury," 6 April 2010.

⁶¹ Fonterra Press Release, "Fonterra opens New Zealand's largest cool store," 10 September 2010.

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Consistent with the DIRA regulations, Fonterra's contracts with farmers do not restrict farmer switching. Longer-term supply contracts, generally ranging from three to six years in duration, account for only about [] percent of Fonterra's total milk collections, and a significant share of Fonterra contracts with farmers expire every year.⁶² Farmers can notify Fonterra if they wish to cease supply for the next season during the application period (15 December to 28 February).

Switching by farmers has occurred and continues to occur. []

[]

Fonterra also competes to convince switching farmers to return to supplying Fonterra (which it calls "win-backs"). []

[]

Switching does not make up a large share of farmers or of the total milk supply. However, this does not mean that switching does not provide a significant competitive constraint on Fonterra. Farmers' ability to switch is essential to ensuring that competition between processors for milk supply exists and that Fonterra is efficient. In a highly competitive market, one would not necessarily expect a large amount of switching, because the threat of switching forces processors to match competing offers and removes the incentive for many farmers to switch processors.

Even with a small amount of switching each year, the total amount of milk collection from farmers by independent processors has increased significantly over time. The chart below shows the amount of milk collections by independent processors coming from farmers who switched from Fonterra (assuming they kept supplying the same volumes as in their last season with Fonterra). In the 2009/10 season, [] million out of 152 million kgMS ([] percent) of the milk supply of independent processors came from farmers that switched from Fonterra. The remainder came either from existing suppliers (*e.g.*, for Westland and Tatua) and expansion of supply by those existing suppliers, and new dairy farm conversions.

[]

There is no evidence that switching from Fonterra imposes any economically significant cost on farmers. One indication that the costs of switching from Fonterra to independent processors are not significant is that the proportion of new entrants going to Fonterra versus independent processors is about proportional to the overall relative shares of milk collections by

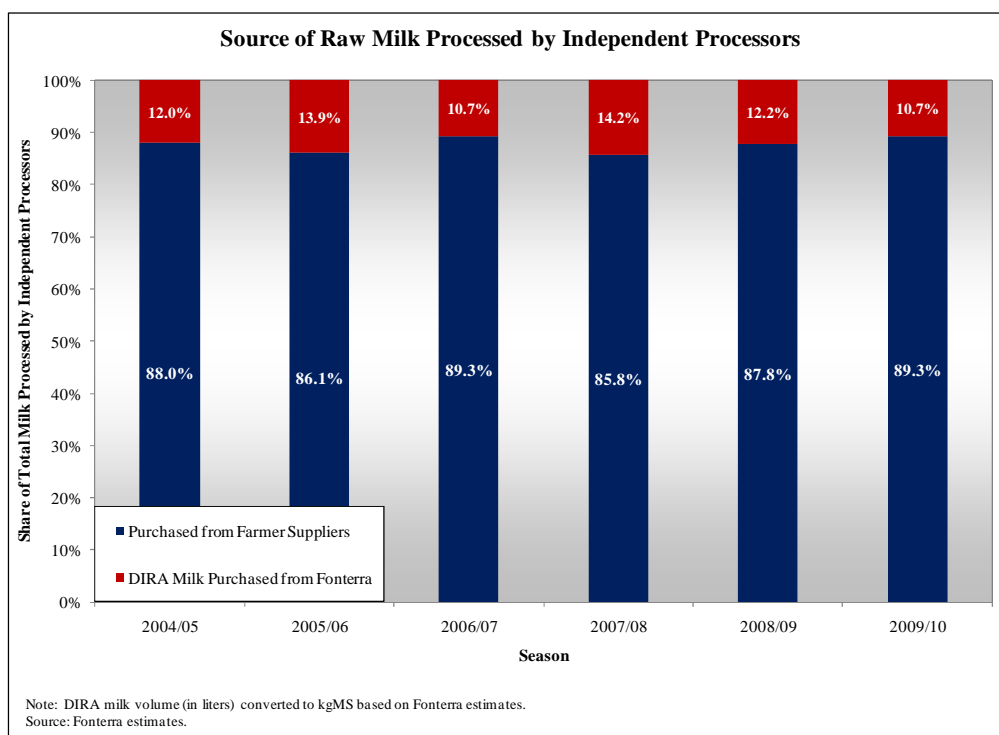
⁶² Summary of Duration of Fonterra's Terms of Supply with Farmers.

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Fonterra and independent processors. We understand that Fonterra believes it gets about 90 percent of “conversions” (new farm entry), roughly proportional to its overall share.⁶³ This suggests that entry-exit costs are not a significant factor in competition between processors.

b) *Large processors that export milk powder into global markets have sourced increasing quantities of raw milk directly from farmers*

Large independent processors have competed for raw milk supply, winning farmers from Fonterra. The chart below shows raw milk collected by independent processors over time. In the 2009/10 season, almost 90 percent of the raw milk processed by independent processors was collected directly from farmers rather than supplied to them by Fonterra under DIRA.



The DIRA milk supply provision may have been important when independent processors first entered the market. In fact, this was the goal of the DIRA Raw Milk Regulations—to lower entry costs by providing independent processors with raw milk supply until they could fill up their plants by contracting directly with farmers. As the Commerce Commission stated, “independent processors are unlikely to be able to build sufficient scale to workably compete with Fonterra without the help of regulated milk (at least at the early stages).”⁶⁴ The chart below

⁶³ Fonterra estimates.

⁶⁴ New Zealand Commerce Commission Response to NERA’s Critique of the Commerce Commission’s Submission on the Raw Milk Review, 21 August 2008, p. 2.

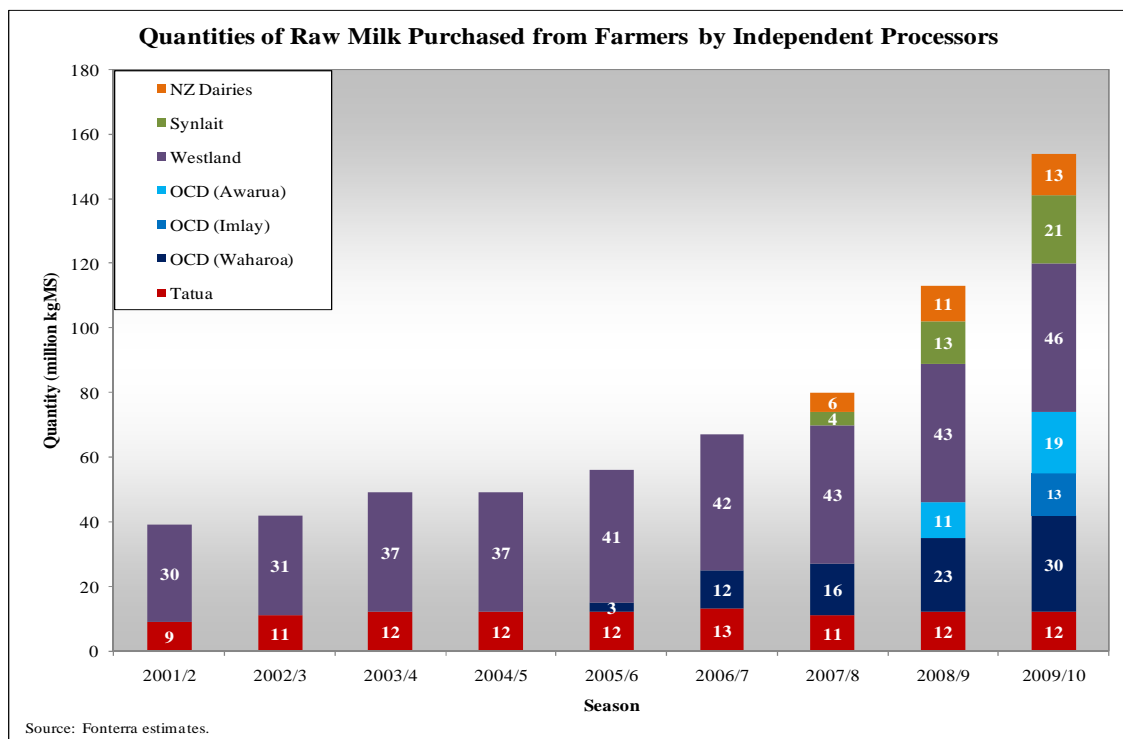
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shows that when [] first entered the market, the DIRA supply made up [] percent of its raw milk in its first season. However, by the 2009/10 season, DIRA milk made up only [] percent of [] supply. It is highly unlikely that for a processor such as [], its continued success depends on the continuance of the DIRA raw milk supply from Fonterra. Because the requirement that Fonterra continue to supply raw milk to large established milk processors is unlikely to affect competition, it amounts to a transfer of wealth from Fonterra to the independent processors with limited economic efficiency.

However, continued supply of DIRA milk may be efficient for processors predominantly supplying domestic dairy products markets (most of which are small scale processors), because the DIRA milk may comprise most or all of those processors’ supply. The availability of raw milk under the DIRA regulations is likely important for the continued existence of these smaller processors. Given the volume of their purchases, it would likely be costly for them to obtain milk directly from farmers, which may prevent them from being profitable.

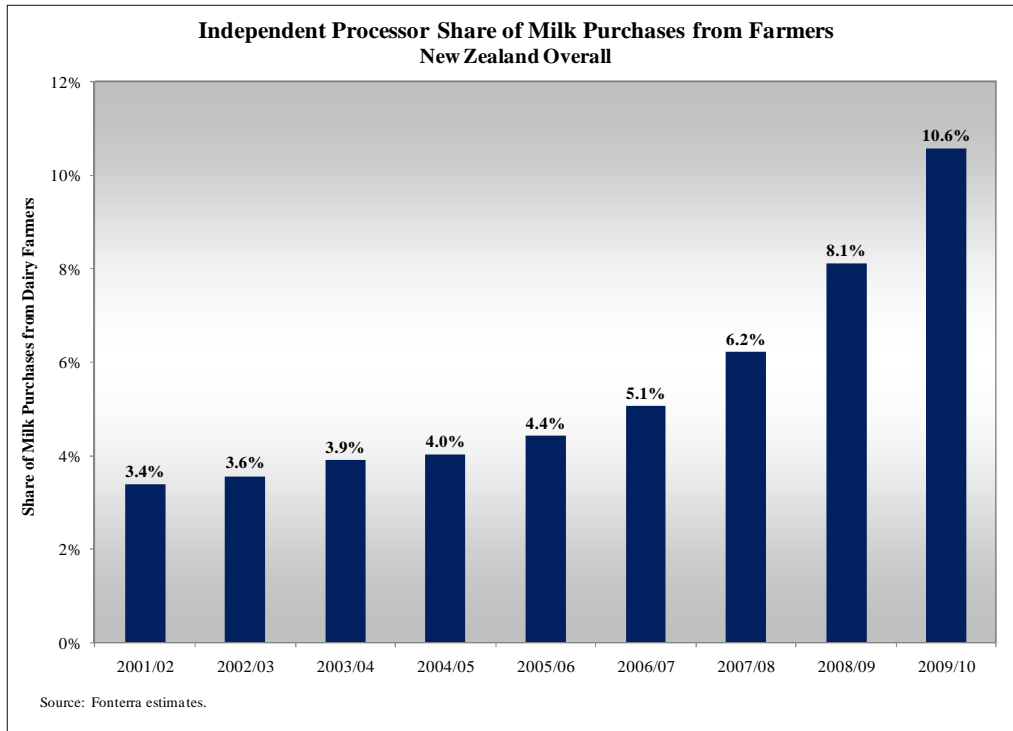
[]

Raw milk collected by independent processors has increased considerably, and that growth has accelerated in the last few years. The following chart shows each processor’s contribution to the growth in the quantity of raw milk collected by independent processors.



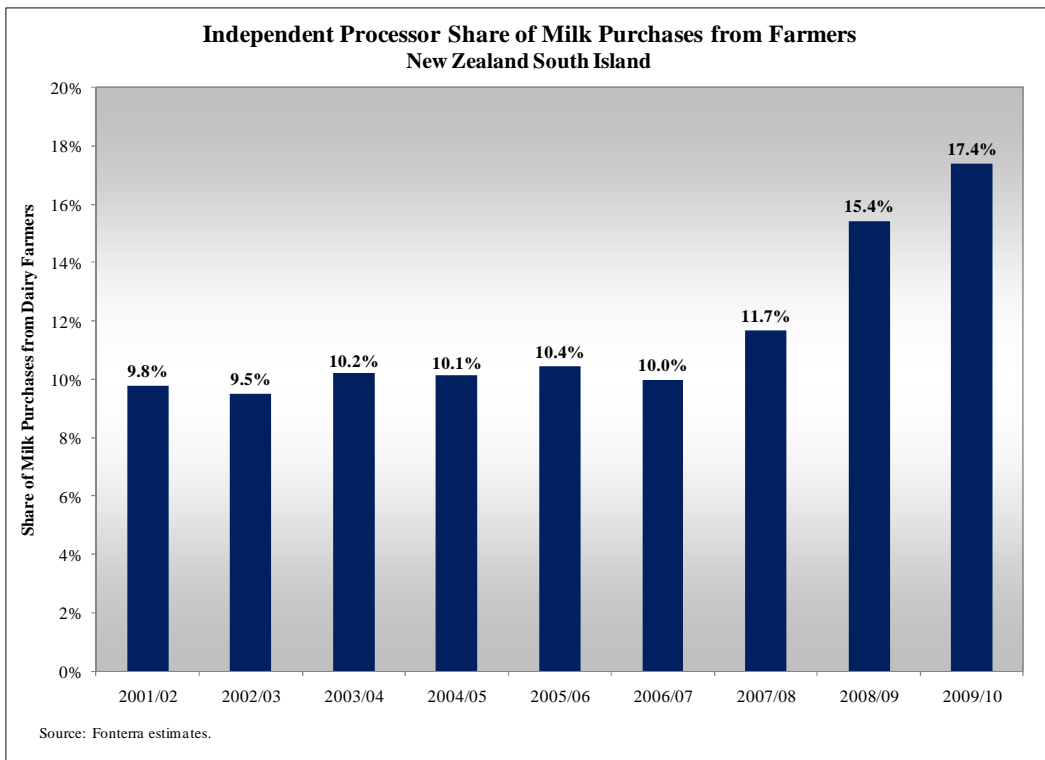
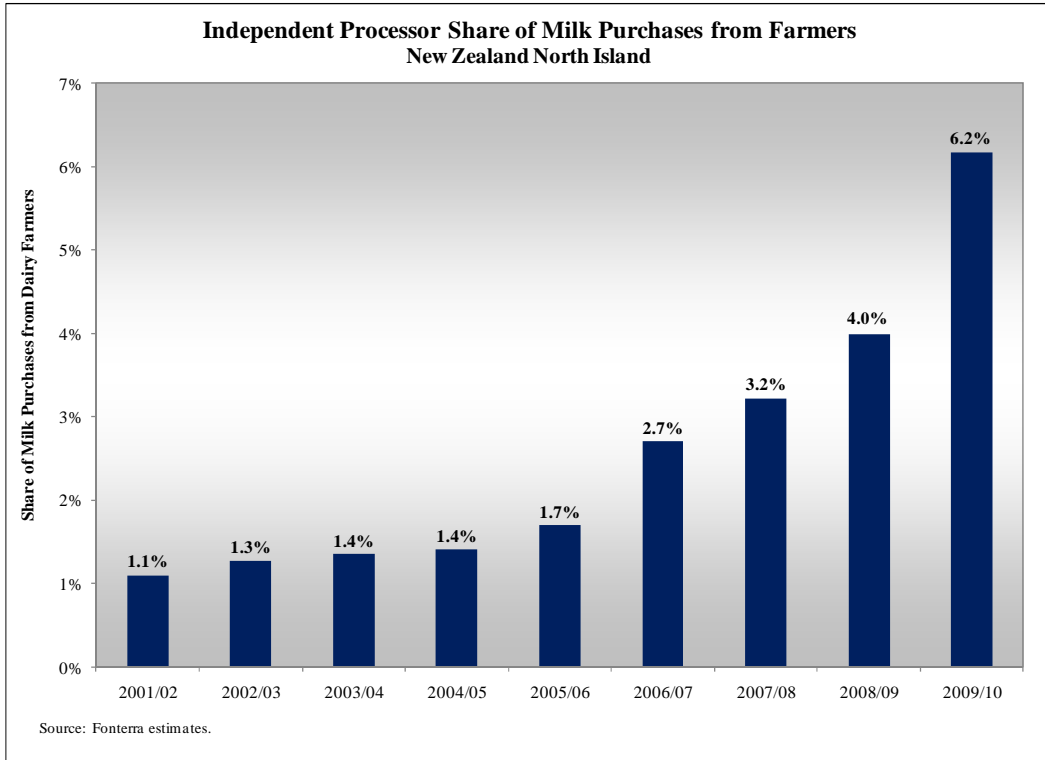
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The share of total raw milk collected by independent processors in New Zealand as a percentage of total milk collected has increased from 3.4 percent in the 2001/02 season to 10.6 percent in the 2009/10 season. Fonterra projects that independent processors' own-supply milk will grow to around 12 to 12.5 percent of total New Zealand milk collected in the 2011/12 season.



Milk collections by independent processors as a share of total milk collected have grown in both the North and South Islands, but independent processors' share of total collections in the South Island is higher than in the North Island. For the 2009/10 season, independent processors' collections in the North Island were approximately 6 percent and in the South Island approximately 17 percent, as shown in the following two charts.

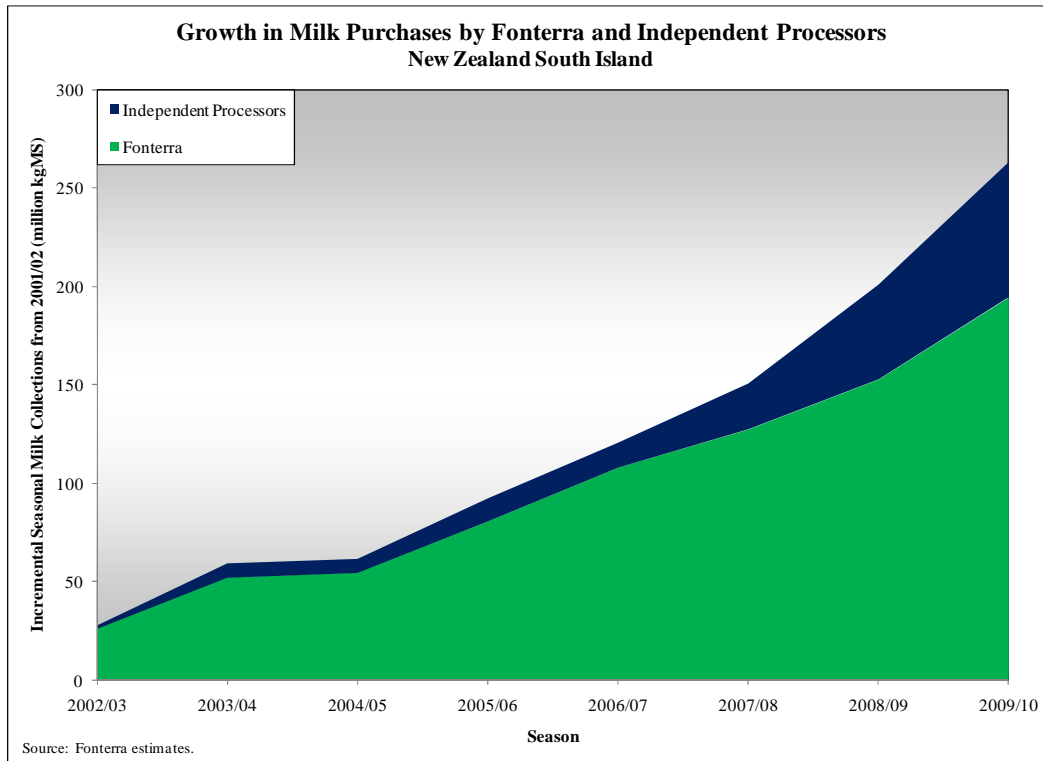
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Independent processors' higher share of total milk collected in the South Island reflects the fact that much of the expansion in processing has occurred in the South Island. This is true

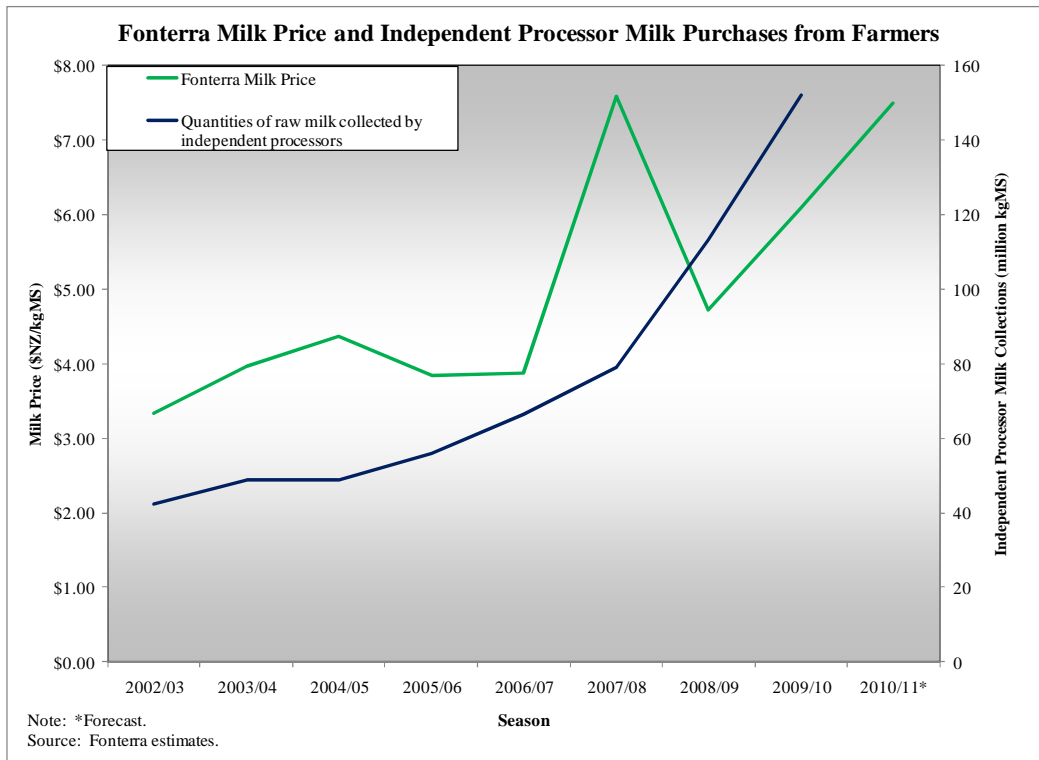
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for both Fonterra and the independent processors. However, as shown by the chart below, over time independent processors have accounted for a larger share of the incremental milk collected in the South Island (above the level collected in the 2001/02 season).



The data on independent processors' milk collections do not support the claim that they have been prevented from obtaining milk from farmers as a result of rising farm gate prices. The following chart shows Fonterra's farm gate milk price (the green line) and the total amount of milk purchased from farmers by independent processors (the blue line). While this is only a partial analysis that does not take into account other factors that have affected independent processors' milk collections or the trend in dairy product prices, the chart shows that independent processors' milk collections have continued to grow despite increases in the farm gate milk price.

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c) *Independent processors have been able to compete for dairy farmers by matching or beating Fonterra’s farm gate milk price (and/or total payout to farmers)*

Independent processors have been able to compete for dairy farmers by matching or sometimes even beating Fonterra’s payments to farmers. As discussed above, Fonterra’s total payout to farmers consists of the farm gate milk price and the dividend payment on their share holdings. Rival *investor-owned* milk processors do not require farmers to be shareholders and thus an initial capital investment by farmers. Accordingly, the only payment farmers receive (unless they also happen to have purchased shares in the corporation) is the farm gate milk price. Rival *cooperative* milk processors, such as Westland and Tatua, pay shareholding farmers a farm gate milk price plus a dividend payment. Thus, in comparing independent processors’ payments to Fonterra’s payments, it is appropriate to compare the payments of investor-owned processors to Fonterra’s farm gate milk prices, and the payments of cooperative processors to Fonterra’s total payout (assuming a similar initial capital investment required).

The following table compares the individual total payouts of the two rival cooperative processors—Westland and Tatua—to Fonterra’s payouts by season. The differences in payouts can reflect differences in end-product mixes and one-off operating events. This is particularly true for cooperatives, which distribute profits to farmers in the form of dividends, and such profits can be affected by a variety of factors in any particular year. For instance, in regard to

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Tatua's payout level in the 2001/02 season, Tatua explained that its payout was higher than Fonterra's because Fonterra was suffering from a fall in commodity milk prices, while Tatua's product mix was more heavily weighted towards specialized nutrition products that did not suffer as much of a price decline.⁶⁵ When Tatua's payout level was closer to Fonterra's two years later, Tatua explained that some of its previous higher payouts were due to "anomalies and one-off benefits," such as good foreign exchange hedging results and a payout for Tatua's Dairy Board shares.⁶⁶

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Similarly, the following table compares the individual milk prices of the three large rival corporate milk processors—OCD, Synlait and NZ Dairies—to Fonterra's milk price by season. Independent processors have competed for raw milk offering average farm gate milk prices that in some years were higher and in others lower than Fonterra's average farm gate milk price.

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Independent processors also compete for farmers on other aspects besides price, such as service and the quality of their facilities. For example, in its promotional materials, OCD highlights its "Local, modern and efficient plants" and "Unequaled Personal Service" in addition to a "Competitive Milk Price."⁶⁷ Similarly, Miraka's promotional materials highlight that they "are a local dairy company with an intergenerational focus for long term environmental sustainability and financial security for all suppliers, shareholders, and staff."⁶⁸ Miraka further states that its "cost efficiencies are a key competitive advantage," and that its "state-of-the-art facility [is] already proven abroad and in New Zealand."⁶⁹ Miraka guarantees to pay its suppliers the Fonterra Milk Price plus 10 cents.⁷⁰

3. Profitability of independent processors

We examined the financial performance of New Zealand dairy processors based on their financial reports for recent seasons. In particular, we analyzed the operating profits per kilogram of milksolids for Tatua, Westland, OCD and Synlait. Operating profits reflect a firm's revenues

⁶⁵ "Awesome' Tatua payout leaves Fonterra standing," Phillipa Stevenson, <http://www.nzherald.co.nz/news/print.cfm?objectid=2147132>.

⁶⁶ "Tatua payout slides but still beats Fonterra's by a neck," Chris Hutching, 16 July 2004, SHARECHAT.co.nz.

⁶⁷ <http://opencountry.co.nz/page/14-supply-your-milk>, accessed 25 May 2011.

⁶⁸ Miraka Limited promotional flyer obtained by Fonterra.

⁶⁹ *Id.*

⁷⁰ *Id.*

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minus normal operating costs, such as cost of goods sold (*e.g.*, raw milk), sales and marketing expenses, depreciation on plant and equipment, and foreign exchange results.⁷¹

As shown on the table below, operating margins have varied considerably by processor and season.⁷² Although not all processors have made positive returns in every season, all have done so for at least some seasons during the time period we examined. Moreover, in every year at least one of these large independent processors was profitable. At a general level, this heterogeneity in financial results, both across processors and seasons, suggests that factors other than the raw milk price affect profitability.

Independent Processor Operating Margin					
Processor	Operating Profit/Total Revenue				
	2005/06	2006/07	2007/08	2008/09	2009/10
Tatua	-	3%	1%	13%	-4%
Westland	-	-2%	-4%	6%	2%
OCD	8%	2%	-4%	13%	-3%
Synlait	-	-	-	-21%	8%

Sources: Company financial statements; Fonterra estimates.

The product mix chosen by a dairy processor appears to play a role in the processor's profitability in a given year because the *relative* global prices of different dairy products change considerably over time. Because the competitive price of raw milk in New Zealand is determined, as we describe above, by the export prices of standard commodity dairy products, particularly milk powders, a relative change in prices between those commodity products and other dairy products can affect profits for any given processor in any particular year. Changing relative prices along with different product mix choices of independent processors is consistent with the considerable volatility, across processors and over time, in the profitability of the independent processors as indicated by the table above. The variability in profitability that results from processors' choice of product mix undermines the ability to base an assessment of Fonterra's Milk Price Manual on the profitability of independent processors in any particular year.

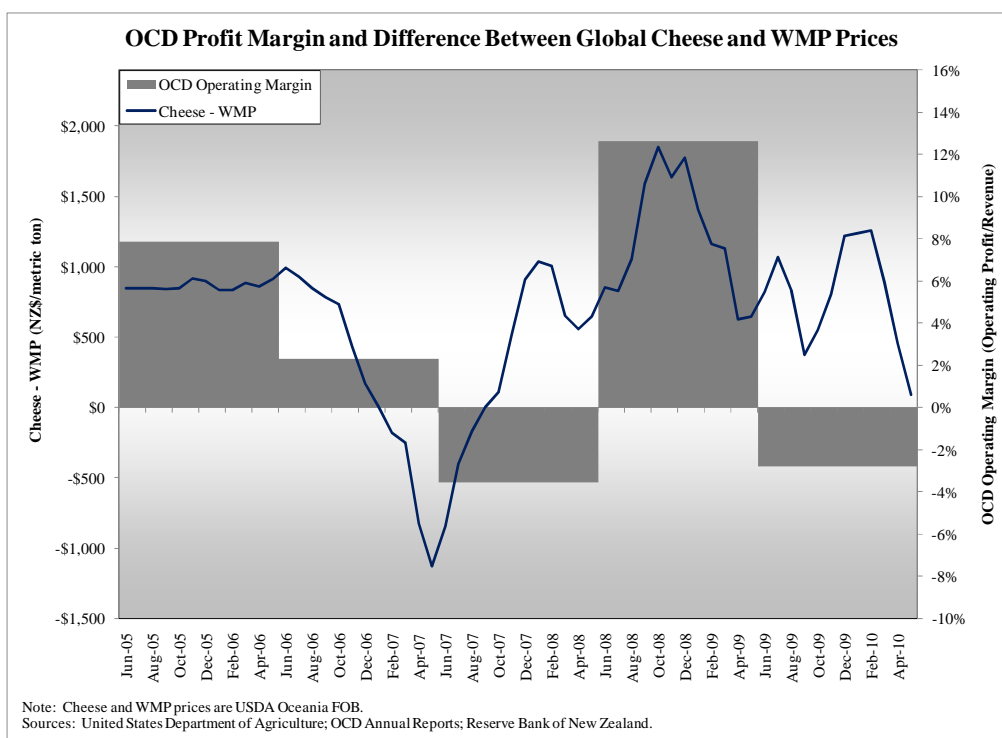
For instance, OCD's product mix is highly weighted towards the production of bulk cheese. As a result, its profits are affected by the global price of commodity cheese relative to the price of milk powders. As we discuss above, these milk powders largely drive the competitive farm gate milk price. When global prices of commodity cheese are high relative to milk powders, OCD has tended to have large operating profits. When the opposite has occurred,

⁷¹ Operating costs do not include financing costs (*e.g.*, interest payments on debt) or taxes.

⁷² Operating margin is operating profit (or loss) divided by total revenues.

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OCD has incurred losses or made smaller operating profits. In the chart below, the blue line shows the difference in the export prices of commodity cheese and whole milk powder (*i.e.*, price of commodity cheese minus price of whole milk powder).⁷³ The grey bars indicate OCD's operating margin for each season. As the chart indicates, the relative price between commodity cheese and whole milk powder appears to be an important driver of OCD's operating margins. When the export price of cheese relative to whole milk powder was high in the 2008/09 season, OCD's operating margin was 13 percent. In contrast, when the price of cheese dropped relative to the price of whole milk powder during the 2007/08 season, OCD's operating margin was negative 4 percent.⁷⁴



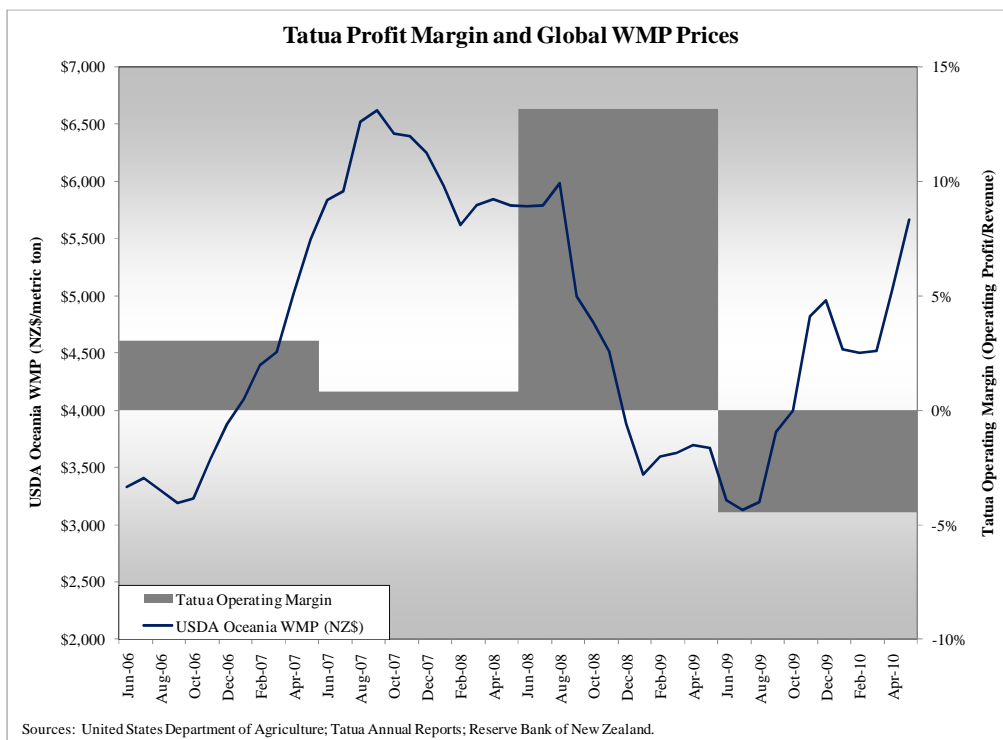
Similarly, a large share of the dairy products manufactured by Tatua and Westland are value-added products. As a result, their profitability tends to be inversely related to global milk

⁷³ Prices for cheese and whole milk powder reflect monthly averages of midpoints of biweekly price ranges for USDA's international export prices for Oceania, converted to New Zealand dollars using monthly exchange rates from the Reserve Bank of New Zealand.

⁷⁴ Exchange rate risk management also is an important factor in the profitability of New Zealand processors. Olam International, the Singapore-based commodities group that owns a 25 percent stake in OCD, said in its August 2010 earnings statement that "in risk management, in counterparty risk management, in terms of exchange rate management, [OCD] didn't do a good enough job." "Q4 2010 Olam International Ltd. Earnings Presentation – Final," Fair Disclosure Wire, 26 August 2010, p. 18.

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powder prices, which drive the farm gate milk price. For instance, as the chart below shows, Tatua’s profit margin was low in the 2007/2008 season, when export whole milk powder prices were high.⁷⁵ When milk powder prices dropped in 2008/09, Tatua’s profit margin increased to 13 percent. In 2009/10, whole milk powder prices increased again, leading to losses for Tatua. Consistently, Tatua’s Annual Report for that season states “[t]he market turned upward sharply in August and September 2009, with whole milk powder leading the market recovery. Tatua had both low inventory and a number of fixed contracts in place when the market recovered. This resulted in a lag in price recovery for our product mix, which is based around caseinate, whey protein concentrate and anhydrous milk fat.”⁷⁶ Regardless of these losses, Tatua remained optimistic of their ability to be profitable, stating that “prospects for Tatua in 2010/11 are positive.”⁷⁷



Westland’s product mix, which also is weighted toward value-added products, has resulted in a similar pattern of profitability, as shown in the chart below. As in the case of Tatua, when export whole milk powder prices were high in 2007/08, Westland suffered losses.⁷⁸ When

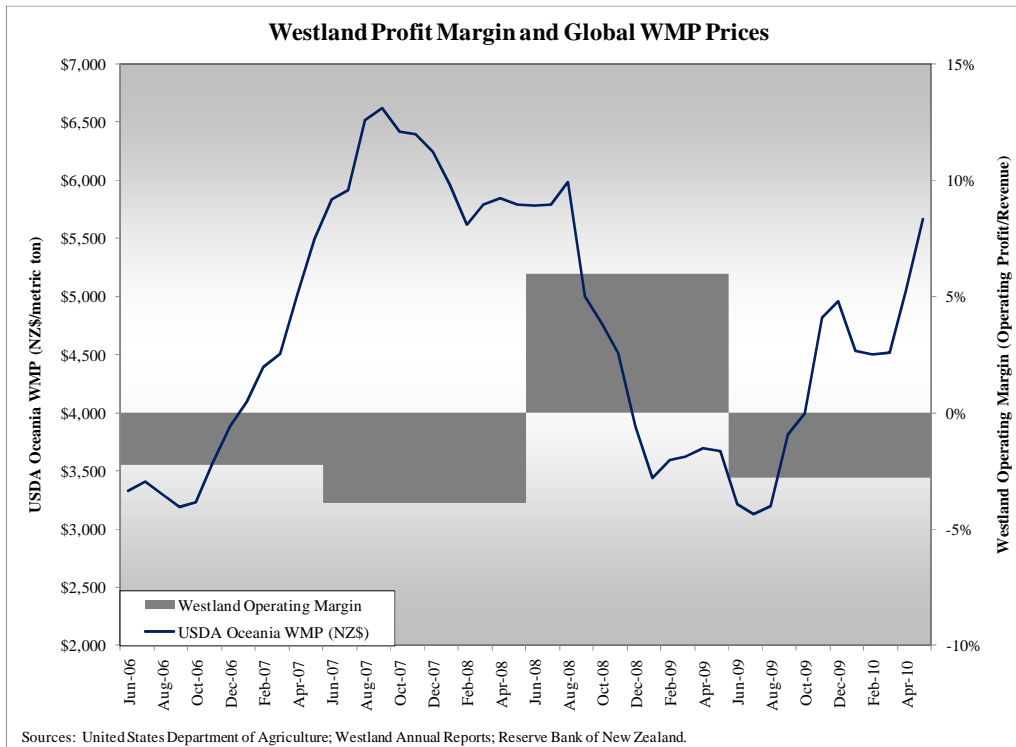
⁷⁵ See footnote 73 for data source notes.

⁷⁶ Tatua Co-operative Dairy Company Limited Annual Report 2010, p. 2.

⁷⁷ *Id.*

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export whole milk powder prices dropped in 2008/2009, the cooperative’s profitability improved.



The foregoing suggests that there potentially are differential effects of commodity price changes for New Zealand independent processors in any given year depending on their product mix choices. The volatility in the profitability of these independent processors should not be perceived as a failure of the DIRA regulations, or of Fonterra’s Milk Price Model. Product mix is a normal commercial risk—a company that chooses a product mix other than basic commodity dairy products (such as milk powders) are likely to achieve substantially higher profits, all else equal, when the prices of those products rise relative to the prices of milk powders. When the prices of such products decrease, those firms risk losses. There is no economic basis for compensating firms for such losses, especially when the firms reap gains from their risk taking in other years. Moreover, such fluctuations in profitability within a firm or across firms are not a consequence of Fonterra’s Milk Price Model. Whatever products form the basis for determining the farm gate milk price, the profits of independent processors would depend at least in part, on the product mix they choose relative to those products.

⁷⁸ See footnote 73 for data source notes.

4. Smaller processors that supply domestic markets have not been constrained by the DIRA supply.

In addition to the large independent processors we discuss above, there are also a large number of small independent milk processors predominately focused on supplying the domestic dairy markets. As of 2006, there were approximately seventy smaller companies operating in product or regional market niches in New Zealand. Smaller processors have not been constrained by the quantity of milk available under DIRA—*i.e.*, they take less than the 50 million liters allowed by the DIRA regulation. The table below shows the purchases of DIRA milk by a number of these small processors. As the table shows, all of these processors combined do not reach the 50 million liter cap imposed by DIRA regulations.

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B. Domestic dairy retail markets

1. Domestic dairy prices have been driven primarily by the global market for dairy products

As we discussed above, Fonterra's incentive to increase domestic prices by raising the farm gate milk price is constrained by the fact that most of its output is sold in the global market for dairy products, in which it is a price taker. At the same time, the significant portion of New Zealand dairy products that are exported creates a strong link between domestic dairy prices and global dairy prices. The reason for this economic link is that the export market influences the opportunity cost of selling dairy products domestically. When a processor sells dairy products in the domestic market, it loses the opportunity to sell the products in the global market. In theory, a processor will sell in the domestic market only if it can obtain a return equivalent to the return it can obtain in the export market. Thus, when export prices increase, the return from exporting dairy products also increases, which creates incentives for New Zealand processors to export more and sell less in the domestic market. The incentive to decrease supply to domestic markets leads to higher domestic dairy prices. The reverse is also true: when export dairy prices fall, returns from domestic sales relative to exports increase, creating incentives to supply more to domestic markets, which leads to lower domestic prices. This is a normal and competitive part of the globalization of the New Zealand dairy industry.

The farm gate milk price that dairy farmers receive also is tied to export prices. Even in fully competitive dairy markets, New Zealand dairy processors would bid up the price of raw milk up to the point where they are earning a normal rate of return exporting dairy products. If export prices rise, increasing potential returns in the global market, competition between processors will drive up the farm gate milk price. Fonterra's Milk Price Model does not create an artificial link between domestic and global dairy prices. The fact that Fonterra's Milk Price Model is based on revenues driven largely by commodity dairy product prices in the global market simply reflects the economic reality that the farm gate price is intricately linked to global prices for dairy products. Again, this is a normal and competitive outcome of globalization. The same outcome would be expected if processing and other dairy markets in New Zealand were fully competitive.

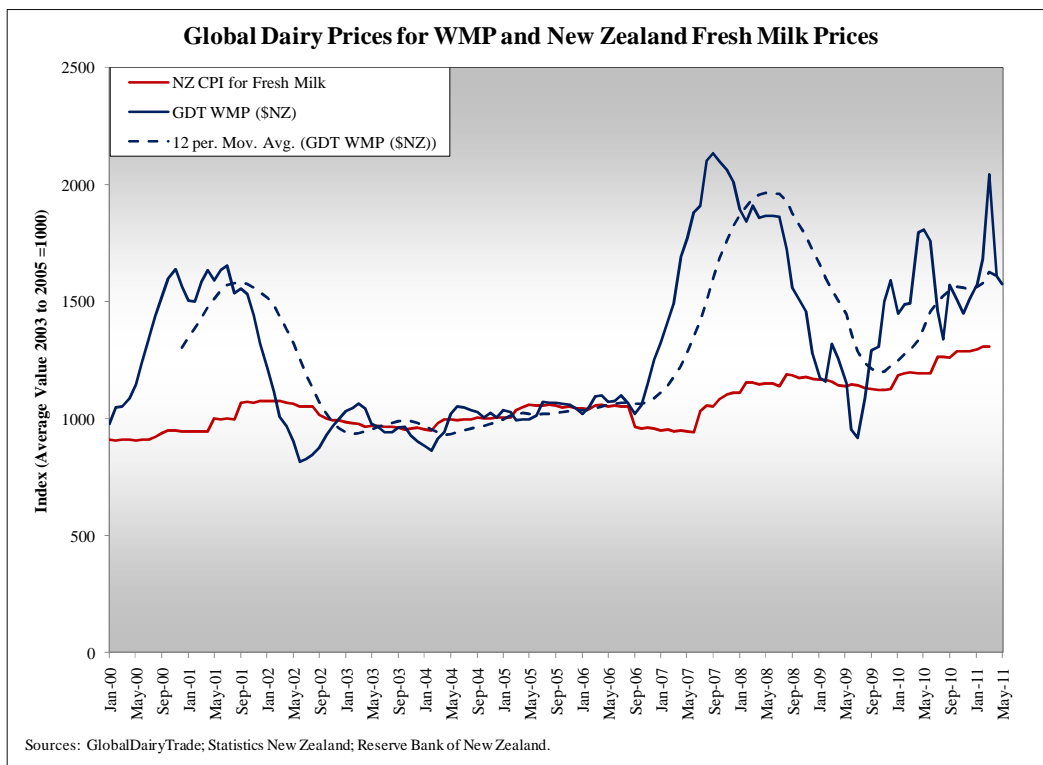
We analyzed the empirical evidence on global and domestic dairy prices using publicly available data. Data on New Zealand domestic retail dairy product prices are available from Statistics New Zealand, which publishes price data for various product categories, including dairy products. In particular, consumer price indices, which track changes in consumer prices over time, are published on a quarterly basis for Fresh Milk, Preserved Milk, Yoghurt, Cheese, and Other Milk Products.

Data on internationally traded dairy products are available from several public sources, including the United States Department of Agriculture's (USDA) Agricultural Marketing Service, and GlobalDairyTrade. The USDA publishes biweekly prices for exports of butter,

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skim milk powder, whole milk powder, and cheddar cheese for the Oceania and Western Europe export markets, which are available from 1993 to present. GlobalDairyTrade (GDT) is an auction platform for internationally-traded commodity dairy products, specifically whole milk powder, skim milk powder, buttermilk powder, and anhydrous milkfat (cheese will be offered on its auctions beginning in July of this year). GDT also calculates and publishes an overall dairy product price index, called the GDT-TWI (trade-weighted index). The GDT-TWI is based on product prices from GDT’s auctions and product volumes from Global Trade Atlas. (Since GDT started in 2008, it uses USDA historical prices for earlier periods.)

The chart below compares global and domestic prices for dairy products. In particular, the chart shows the monthly global export price for whole milk powder along with the domestic retail price for fresh milk, indexed to their average values during the period 2003 to 2005.⁷⁹

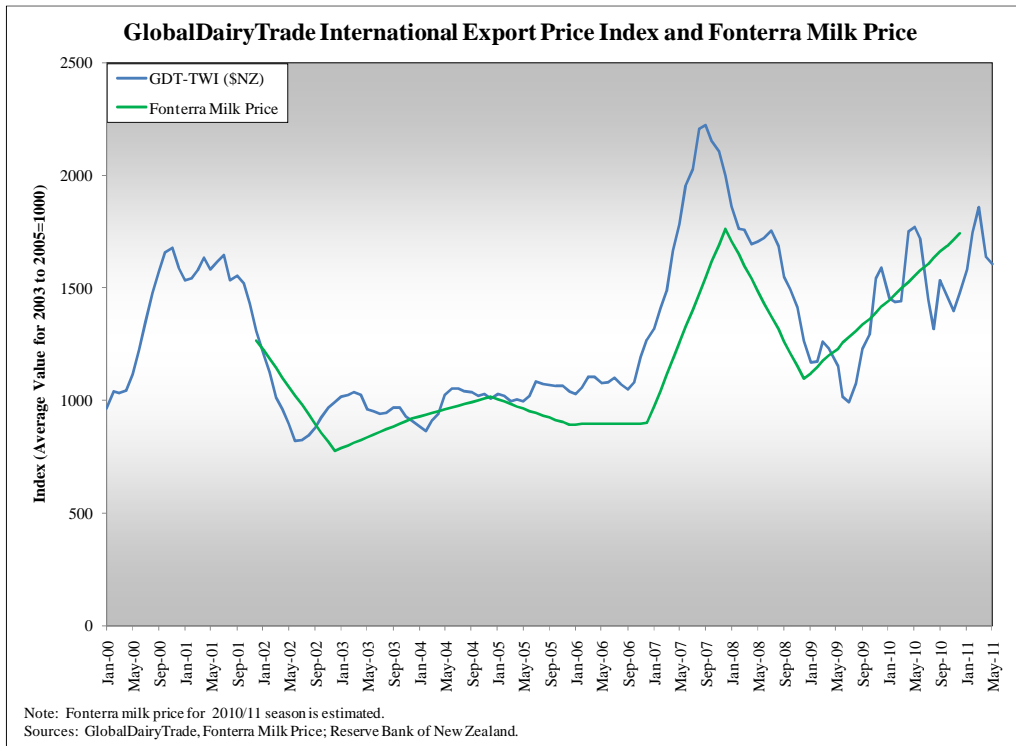


Similarly, we analyzed the relationship between Fonterra’s farm gate milk price and the prices of globally traded dairy products (using the GDT-TWI, which is comprised of whole milk powder, skim milk powder, and anhydrous milkfat). The chart below shows both data series, indexed to their average values during the period 2003 to 2005. It can be seen that Fonterra’s

⁷⁹ Global prices have been converted to New Zealand dollars using monthly exchange rates as reported by the Reserve Bank of New Zealand.

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farm gate milk price has been driven significantly by changes in global dairy export product prices.⁸⁰



Claims that increases in domestic dairy prices are an anticompetitive consequence of Fonterra's Milk Price Model are misguided. The trends in domestic dairy prices and the farm gate milk price—in particular, the fact that they have largely been driven by global dairy prices—are consistent with competitive markets and economic efficiency.

2. Domestic dairy prices have increased less than the global prices for dairy product.

While domestic dairy prices generally track global dairy prices, they have increased less than global prices in the past few years. For instance, since 2006, global export prices for whole milk powder increased by 67 percent, while the domestic retail price for fresh milk has increased by only 25 percent.⁸¹

⁸⁰ Of course, the correlation of two data series does not imply causality. However, the above evidence of supply substitutability, and the observation that Fonterra's farm gate milk price does not exhibit the volatility of the global price, support the conclusion that Fonterra responds to global dairy prices, not vice versa.

⁸¹ Change calculated from 1Q2006 to 1Q2011.

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The lower increases in domestic dairy prices reflect a number of developments that have put downward pressure on domestic prices. These developments largely relate to increased competition in domestic retailing and wholesaling. In retailing, a major change over the past several years has been the growth of private label brands offered by retailers. Retailers have become powerful, and have negotiated aggressively with milk processors—Fonterra and Goodman Fielder included—for the supply of store-brand dairy products, which they then sell at a discount relative to branded dairy products. We understand that approximately 70% of domestic fresh milk sales in New Zealand are now private label branded products. This added competition at the retail level has helped offset domestic price increases that would have otherwise occurred due to higher global prices. In addition, we understand that competition has increased in wholesaling leading to lower wholesaling margins, which have fed through to lower prices to consumers.

C. Dairy exports

Available evidence indicates that New Zealand processors have been able to compete successfully in the global dairy market since the enactment of DIRA. New Zealand dairy exports are almost 20 times domestic consumption of dairy products. Dairy products are New Zealand’s single biggest export, accounting for approximately 25 percent of total merchandise export earnings.⁸²

New Zealand dairy producers’ strong performance in the global export market can be seen by observing the country’s share of all globally traded dairy products. The chart below shows New Zealand’s share of total global dairy export volume by year since 2000, which has been increasing steadily over the past decade, from 25 percent in 2000 to 37 percent in 2010.

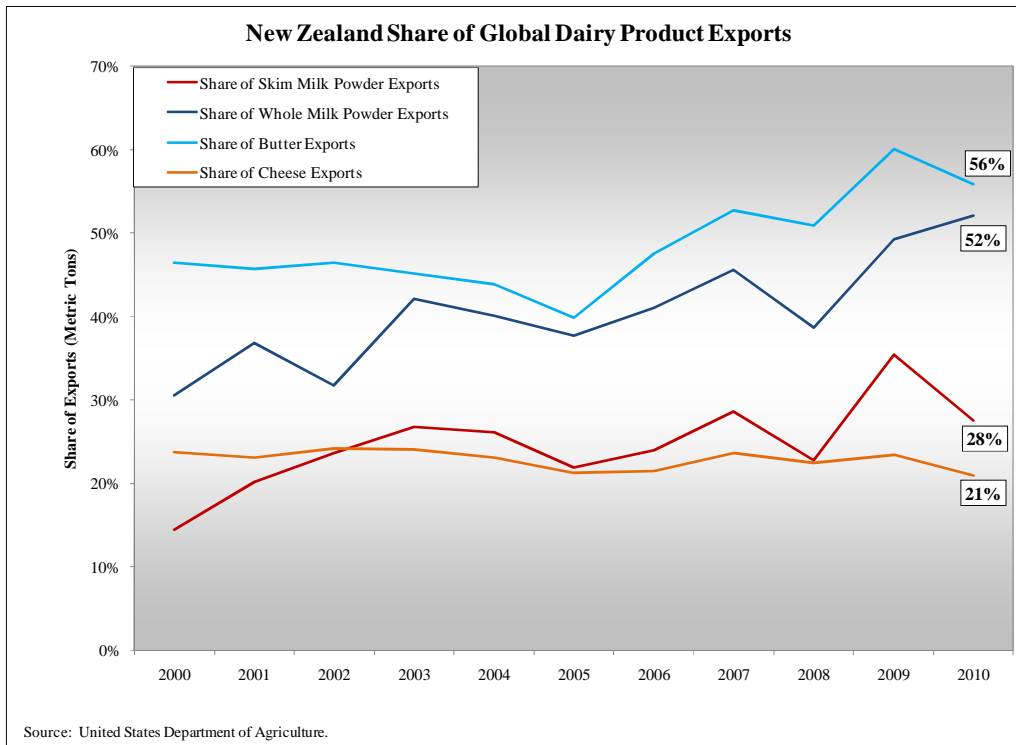
⁸² For example, a Fonterra press release from 2008 states, “[i]n the latest figures dairying’s contribution has risen by more than three percent to a total of 27% of New Zealand’s export revenues, and Fonterra’s contribution alone is 25%.” (Fonterra Press Release, “25% of New Zealand’s export earnings from Fonterra,” 21 July 2008.)

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New Zealand’s share of global dairy exports varies somewhat by product type, as shown on the chart below. In 2010 New Zealand contributed 52 percent of the total world trade in whole milk powder, 28 percent of skim milk powder, and 21 percent of cheese. New Zealand is the world’s largest butter exporter and accounted for about 56 percent of all globally traded butter in 2010.

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Despite its sizeable and increasing share of global dairy exports, economic theory and the empirical evidence suggest that Fonterra does not have market power in the global dairy export trade. Although Fonterra may supply a large share of global export demand, it accounts for a very small share of total milk production. In particular, although New Zealand accounted for 37 percent of global dairy export volume in 2010, it accounted for only about 3.5 percent of total world milk production.

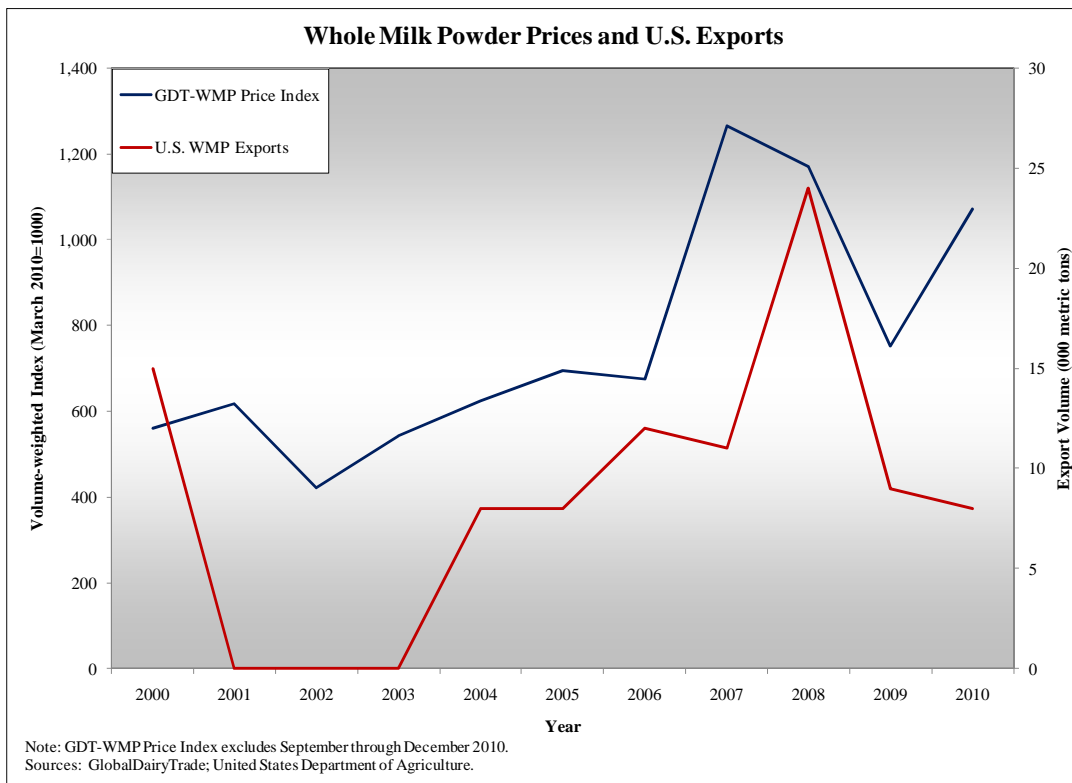
The fact that New Zealand accounts for a small share of total milk production suggests that other countries could divert some of their domestic dairy production from domestic consumption to supplying global export demand if Fonterra attempted to increase dairy prices in the global market. This is known as “supply substitutability”—in this case, between domestic sales and exports. In particular, an increase in global dairy prices creates incentives for suppliers in other countries to sell dairy products in the global market instead of domestically.

The greater the degree of supply substitutability between domestic and export markets, the less likely that firms currently supplying the export market can unilaterally raise prices.⁸³ Although we have not undertaken an exhaustive analysis, there do appear to be instances where exports of dairy products by some countries increase in response to increases in global dairy prices, suggesting the existence of some degree of supply substitutability.

⁸³ It is this substitutability between use of raw milk for the domestic market and for export markets that links domestic prices to global prices, as we discuss above.

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For example, the chart below shows the volume-weighted annual average GlobalDairyTrade export price index for whole milk powder (the blue line), and the whole milk powder export volume from the U.S. (the red line) in each year from 2000 to 2010. The U.S. is not a large exporter of whole milk powder, accounting for less than 1 percent of global export trade in whole milk powder over the past 10 years. In fact, it exported no WMP from 2001 to 2003, which corresponds to a period of low global whole milk powder prices. However, the U.S. is one of the largest producers of milk in the world.⁸⁴ When whole milk powder prices began to climb after 2002, so did U.S. export volumes, reaching a peak in 2008. This correlation between U.S. exports of milk powder and global prices suggests that there is substantial substitutability between domestic sales and exports.



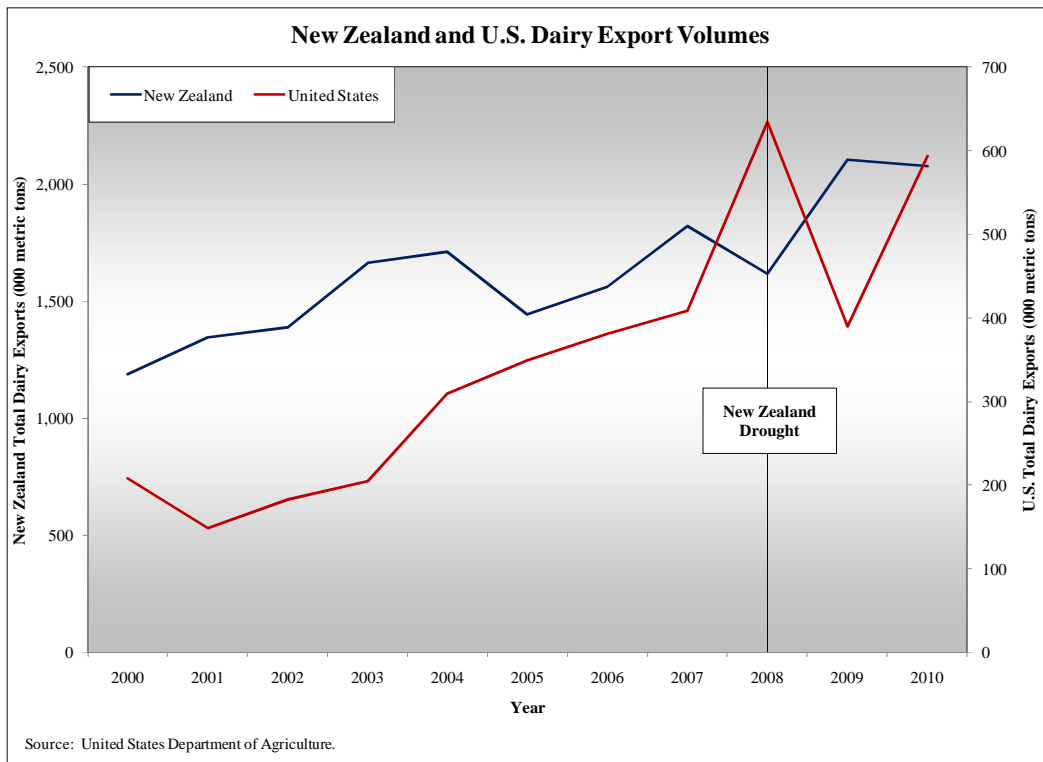
Potential suppliers may also react to “supply shocks,” where the global export volumes are reduced by exogenous factors.⁸⁵ One such supply shock which is known to affect global dairy trade is the impact of weather events, *e.g.*, extreme dry weather. Again, we have not undertaken a systematic analysis, but the available data indicates some evidence of this

⁸⁴ In 2010 the U.S. ranked third in world production of fluid milk, after the EU and India. (Source: United States Department of Agriculture.)

⁸⁵ Note that this is not unrelated to a supply response to price movement, in the sense that all else equal a supply shock (positive or negative) would be expected to have an inverse impact on market prices.

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occurring. For example, it appears that other exporters responded to the 2008 drought in New Zealand, which caused decreased dairy export volume. As shown on the chart below, total U.S. dairy product export volume increased by about 50 percent in the year of the drought, then decreased in 2009. This empirical evidence also is suggestive of the existence of supply substitutability.



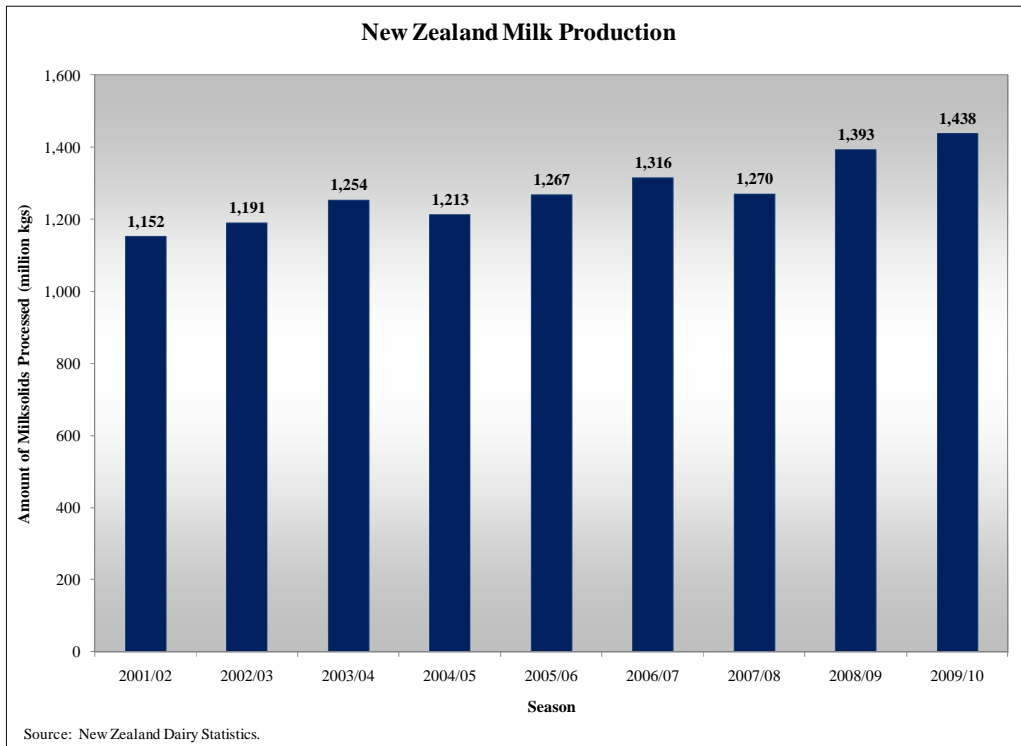
The ability of other countries to considerably increase dairy exports would undermine any attempt by Fonterra to exercise market power in the global market. Given Fonterra’s small share of total worldwide production of dairy products, it is a reasonable assumption that it is a “price-taker” on the global dairy export market.

D. Dairy farming industry

Trends in the “upstream” raw milk production market are consistent with the success of DIRA in enhancing competition in New Zealand’s dairy industry. Industry output is a common indicator of competition and efficiency. The exercise of market power, either in an output market or input market (*i.e.*, monopsony), entails a restriction of output in order to raise output prices and/or lower input prices. Thus, increases in output may suggest the lack of anticompetitive effects.

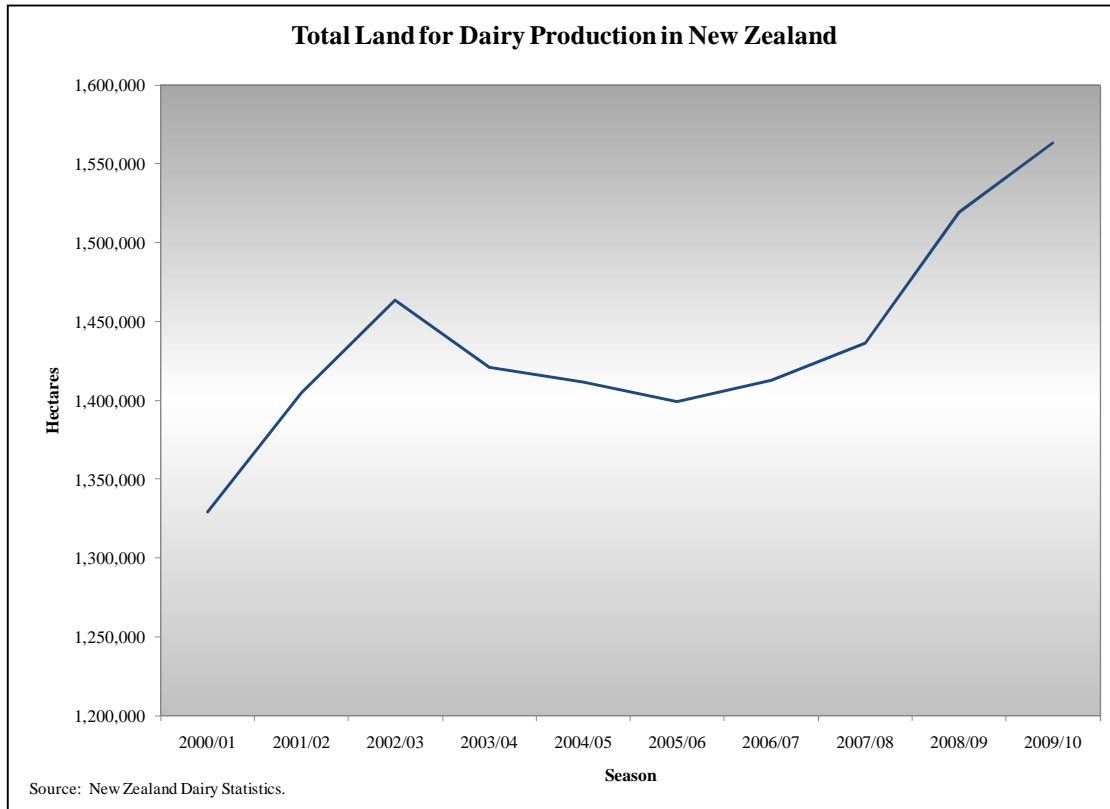
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New Zealand dairy farmers have increased their aggregate production of milk since DIRA. As shown on the chart below, total milk output per season of New Zealand's dairy farms has increased almost 25 percent (from 1.152 billion to 1.438 billion kilograms of milksolids) over the past nine seasons.



There also has been an increase in land use for dairy farming in New Zealand. According to New Zealand Dairy Statistics, total hectares of land for dairy have increased from about 1.33 million to 1.56 million between the 2000/01 and 2009/10 seasons, as shown in the chart below.

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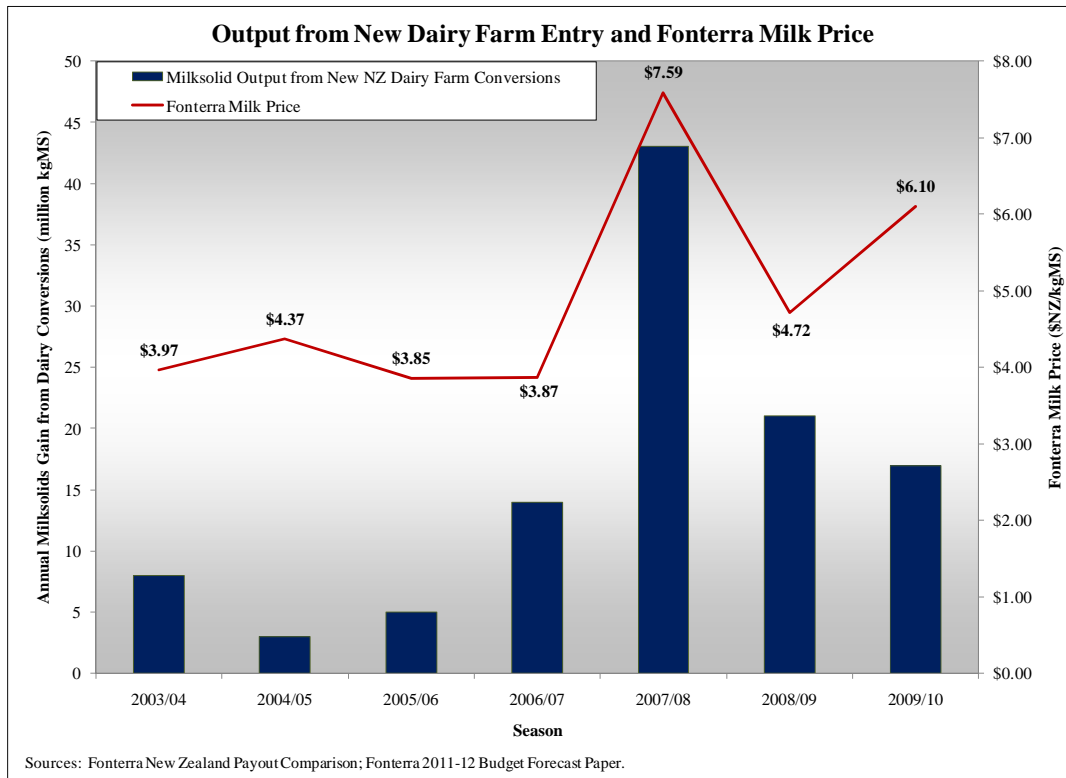


The share of agricultural land used for dairy farming has also increased over time. At the inception of DIRA, in the 2001/02 season, 9.0 percent of agricultural land was used for dairy farming. By the 2009/10 season, 10.7 percent of agricultural land was used for dairy farming, representing a 19 percent increase over the period.⁸⁶

More extensive use of land for dairy farming can occur from expansion of existing dairy farms and the entry of brand new dairy farming operations. We examined data from Fonterra on new dairy farm entry. The charts below show the amount of milksolids generated by new dairy farm conversions each season from 2003/04 to 2009/10, as well as the Fonterra farm gate milk price. It can be seen that in each season, new dairy farms have entered and contributed to New Zealand milk production. Furthermore, new dairy farm entry has varied over time in a way that appears to respond to economic incentives, namely the farm gate price received for milk.

⁸⁶ This increase in total land for dairy production has occurred at the same time as a decrease in the overall amount of land used for all types of agricultural products. The amount of total agricultural farm land in New Zealand has fallen about 6 percent since 2002. (Sources: Statistics New Zealand; New Zealand Dairy Statistics.)

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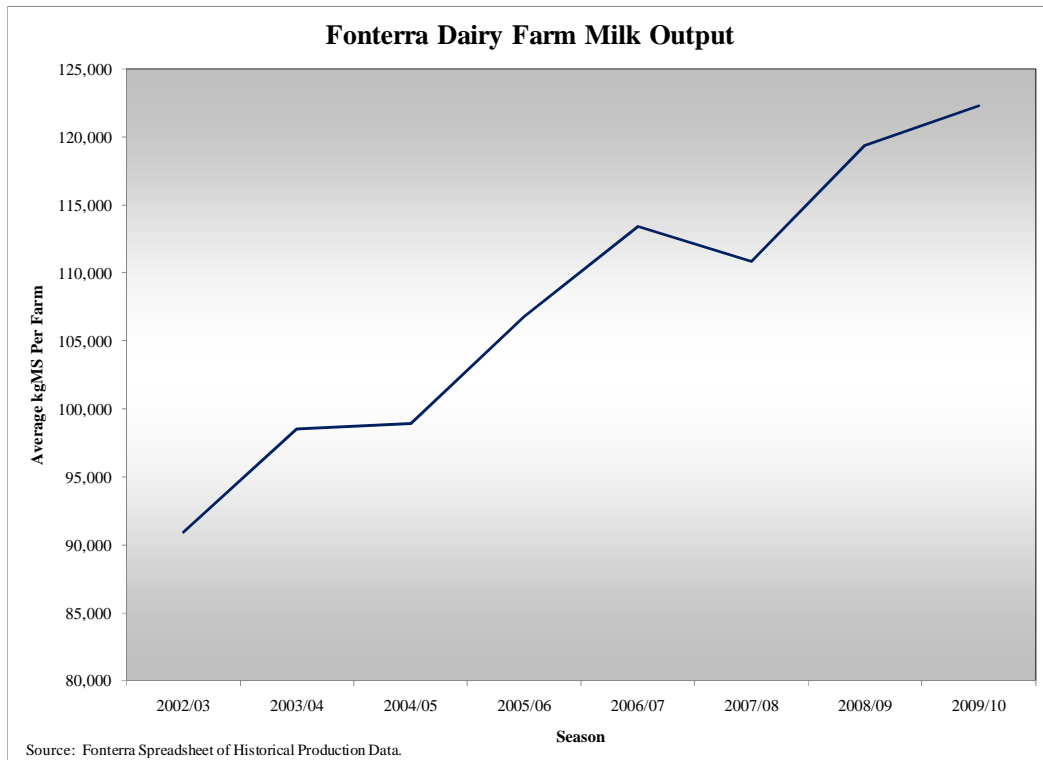


A competitive market for milk production also would be expected to spur productivity and enhance efficiency in the use of dairy farm land. To examine this question, we obtained data from New Zealand Dairy Statistics on milk production per hectare of dairy farm land. The data shows that since the 2000/01 season, average milkfat output has increased from 472kg to 519kg per effective hectare, average protein output has grown from 353kg to 392kg per effective hectare, and average milksolids output has grown from 825kg to 912kg per effective hectare, suggesting increased efficiency of land use in dairy farming.⁸⁷ As dairy farms have become larger, this increased productivity of dairy farm land leads to an even greater increase in dairy output per farm.⁸⁸ Data from Fonterra on seasonal milk production per farm shows that average output per Fonterra dairy farm has increased from about 90,000 kilograms of milksolids in the 2002/03 season to over 120,000 kilograms of milksolids in the 2009/10 season. (See chart below.) This increase in average milk production per farm reflects more efficient production and an increase in the average farm size (in hectares).

⁸⁷ We understand such productivity gains can be driven by increased stocking rates, *i.e.*, more dairy cows per hectare of grazing land and genetic improvements.

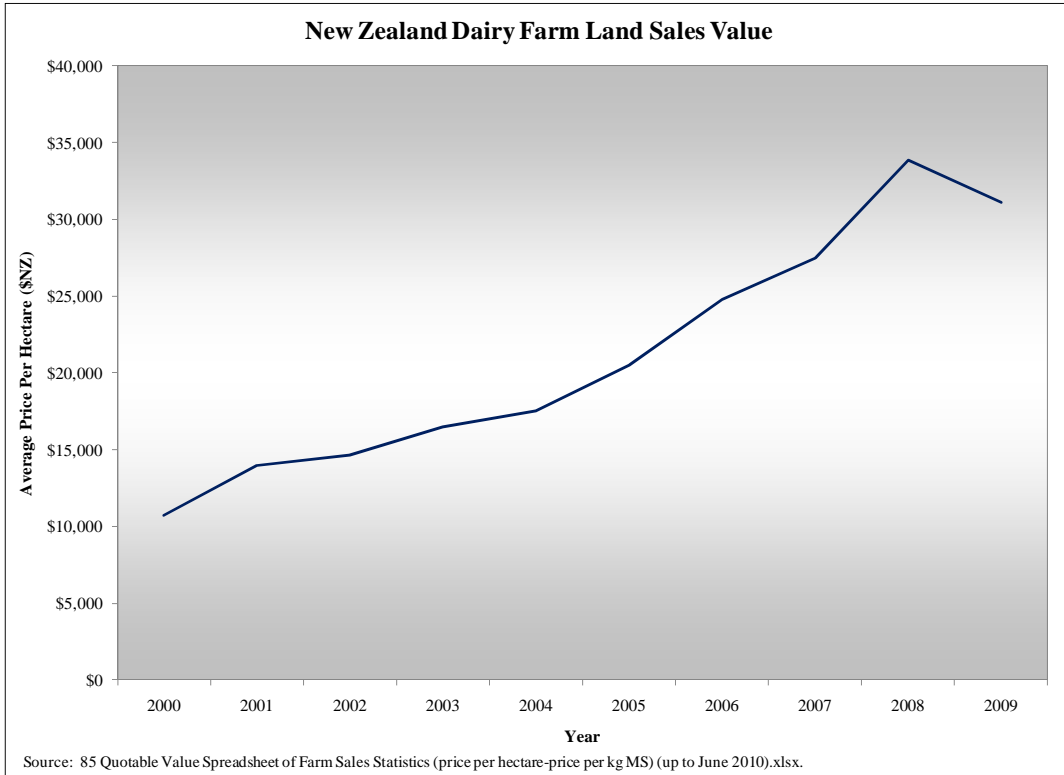
⁸⁸ According to data from Fonterra, the average size of its suppliers' dairy farms has increased from about 103 hectares to over 126 hectares between the 2002/03 and 2009/10 seasons.

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Finally, to the extent that competition in the dairy farming market has added economic value, we would expect to see that value reflected in prices of land for dairy farming. The chart below shows the average price per hectare for New Zealand dairy farm land over the past 10 years. Apart from 2009 (when the global economic downturn affected property values in many countries) the price of farm land has been steadily rising. This is consistent with the above evidence of increased output, new entry, and efficiency gains, and suggests that DIRA has been successful in generating competition in the milk supply market in New Zealand.

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In sum, the evidence we have reviewed shows that total output has increased, new entry has occurred, productivity has improved, and dairy land values have risen. All these observations are consistent with a competitive market for dairy farming, and suggest that DIRA has performed well in enhancing competition in milk supply.